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FIFTY YEARS' EXPERIENCE OF DIGGING.

THIS year we can look back upon twenty-five years of the British School of Archaeology in Egypt, and upon fifty years of my own work. In that time, the changes in our views of man's history have been as great as those in every other direction. The conditions of life have altered in every respect, not only at home but all over the world. There has never been a more rapidly advancing age in man's history; a world where our knowledge of civilisation only began with the Pyramid age, and where we were in complete ignorance of the commonest things of ancient times, would now seem as strange as a world without motors, or aeroplanes, or wireless or radium.

When I first went to Egypt to measure the pyramids fifty years ago, there was mystery as to what went before them. There were long periods entirely hidden from us—three dynasties, five prehistoric civilisations, and the vast neolithic and palaeolithic ages of Egypt. Dr. Birch begged me to bring back a boxful of potsherds from each great town, as he hoped that thus the traditional history might serve to date them,—we now know how futile that was. No one could say whether common blue beads were late or early, or how soon beads were made. The whole conception of having a corpus of types, all dated, had yet to be imagined. Records of tomb-groups did not exist. Nothing about the history of hieroglyphs was known. There was no sense of the changes of style and character in each period, all were alike "ancient Egyptian," reputed to be unchanged for ages. No link between Egypt and Europe was regarded before Alexander; the Egyptian was supposed to have been isolated from the world in a hermit kingdom apart, a land of "mysteries." Even the slight attempts at archaeology were deceptive; Lepsius had published one page of pottery as being of the pyramid age, but it was really thousands of years later.

In 1880 I went to the pyramids, and, though excavations were forbidden, two years' research there opened our eyes. The mere fragments that were lying about showed what powerful means the builders had, in their jewelled saws and tube drills and facing plates. Measurement of the pyramid during two seasons demonstrated the marvellous accuracy of which they were capable and proved what intelligence they must have had. Excavation was permitted in the Delta, and after a season in 1884 at Tanis, methods of regular excavating, and payment for objects found, became fairly established; the great number of papyri which I obtained there, however, have never yet been worked over.

The finding of Naukratis, 1885, by tracing the source of a statuette which I bought, led to knowing the older Greek world, and finding the origin of the little mock Egyptian amulets that were sent over to Rhodes and elsewhere. The abundance of Greek pottery from many sources brought to light the active connections with Egypt. Here Griffith and Ernest Gardner both began their field work with me.

A little earlier in age were the things from Daphnae found in 1886, which yielded some fine Greek vases of rare styles, dating between 664 and 564 B.C. This site also linked up with the Jews a century before the fall of Jerusalem, and with the time of Jeremiah and the fugitives of the royal family of Judah who sheltered there.

A season on the monuments of Upper Egypt in 1887 served to collect the best portraits of foreign races, by means of casts and photographs. The multitude of early inscriptions on the rocks at Aswan were copied, and the Dahshur pyramids partly surveyed.

The Fayum region was a rather neglected district, and in 1888 I was allowed to try it, as well as a dealer sent there to compete with me. After a few weeks spent on clearing up the colossi of Amenemhat III at Biahmu, I had trained a gang of men who would go with me into the desert at Hawara, where we attempted the pyramid, but could not enter it until the following year. During this work we came across the painted wax portraits of Roman age, and by a large series fixed the period of such work. In 1889, in the Hawara pyramid we finally tunnelled into the funeral chamber, which was formed of a single block of stone, and there found the name of Amenemhat III, and of his daughter Ptah-neferu. We also discovered in the cemetery the most complete series of precious amulets known, in the tomb of Horuza (now in Cairo), and I began to work on the xiith dynasty town of Kahun and the xviiiith dynasty town of Gurob. These, completed in 1890, gave us for the first time the domestic detail of houses and objects of those ages: the plan of Kahun is always quoted as the standard example of Egyptian planning. The papyri found here contained the only known examples of early wills and early poetry.

Other discoveries of great historic value were the Aegean pottery of the xviiiith dynasty at Gurob, and the Kamares pottery of the xiith dynasty at Kahun. These first gave a fixed relation between Egypt and prehistoric Greece, and serve for a European time-scale. This Fayum work was rounded off by the opening of the pyramid of Lahun, which was dated to Senusert II. After this, I went to Palestine and began the excavation of Lachish.

Next, in 1891, the pyramid and tombs of Meydum were examined. The much disputed date of that pyramid was fixed by the graffiti about Sneferu on the perfect little temple, the earliest then known, and still the only complete temple of such antiquity. The painted tombs were copied, facsimile, in full size; this was the first time that dry-squeezing on paper was adopted, a method which we generally followed later. The delicate detail of the carving gave great impetus to the understanding of the origins of hieroglyphs. Bliss began his excavating in this work.

With great difficulty, I at last won permission to excavate in the South, and went to Tell el Amarna in 1892, though I was forbidden to open any tombs. That was untouched ground, except to native plunderers. In a few months all the historical facts were worked out, to which scarcely anything has since been added. The amazing revolution in art and in ethics disclosed here threw a new light on Egyptian culture. The painted pavement of the palace (since destroyed) was the most complete that has been seen. The historical connection with Greece was proved by the abundance of Greek pottery in the rubbish-heap of the palace. As this is dated within a few years, it gives the precise stage of Aegean pottery at a fixed date. Here Howard Carter began his work with me.

At this point a serious illness kept me from field work, and the new position of a professorship at University College affected all my future. But in eleven years the Egyptian and Greek archaeology had been firmly established as far back as the xiith dynasty, with partial insight on the early pyramid age. Such was a basis for the much more remote researches that were to follow.

After a rest in Italy in 1893, during which I secured 500 photographic negatives of Egyptian remains in the museums, a fresh start was made at Koptos in 1894. This took us back to the work of Antef, of the early xiith dynasty, and the great prehistoric colossi of Min, the only such figures that have been found. Much that was discovered there, we could only understand by subsequent prehistoric research. Quibell and Grenfell began here.

The next year, 1895, we crossed the Nile and opened up the abundance of the prehistoric periods at Naqada. There was no comparison known for such a civilisation, and it was not until it could be linked to the first dynasty that its real position was ascertained. The great mass of new forms to be drawn compelled the beginning of the *Corpus* system, whereby a reference to numbered types saves the repetition of the drawings for each group. This step in organization has controlled all scientific publication since. It is strange to realise that down to 1895 only stray examples of such prehistoric objects had been found, and ignored as unintelligible; now, suddenly, the entirely new series was spread before us, with its profusion of stone vases, from two thousand tombs; since then, such material is commonly found. Duncan began his career as excavator here.

After this, I was allowed at last to touch Thebes, and opened up the sites of six royal temples. Two landmarks appeared in this work, the great stele of Merneptah naming the people of Israel, and the xiith dynasty papyri which contained literature of the first order, such as the coronation service of Senusert I.

In 1897, though all the Memphite region was barred to research, some Old Kingdom tombs were to be had at Deshasheh. In one of these is the earliest picture of a siege, giving details of scaling-ladders and the sapping of walls. A group of fine statues was also obtained.

Work in the south was resumed at Denderah in 1898, where my wife, and Mace, Randall-MacIver, and N. de G. Davies all began their archaeological careers. The main result here was linking up the art of the Old and Middle Kingdoms by a series of tomb sculptures from the viith to the xith dynasties. Quibell was still on my student fund and, with the assistance of Somers Clarke, had branched off to discoveries at Hierakonpolis; these gave us the monuments of Nar-mer and Kho-sekhemui with other great results of the early dynasties.

A long group of cemeteries near Hu occupied our work in 1899. These supplemented the researches at Denderah by giving the stone vases and the seals of the viith to xiith dynasties. Other cemeteries produced a great quantity of prehistoric remains. By using these, and recasting our results from Naqadah, it was possible to study over a thousand tomb-groups which had at least five varieties of pottery in each. From these, the relative order could be traced by the changes of types. This originated the system of Sequence Dates, fixing the order of development, which has been generally accepted since then as a standard.

Then followed the four years at Abydos, 1900-3, which put into shape the civilisation of the 1st and iind dynasties, and the exact development of the

Royal Tombs, the arts and the writing of that time. The later system in the xiith and xviiiith dynasties of duplicated royal tombs was discovered; in the city, ten successive temple plans were disclosed; the ivory statuette of Khufu and earlier pieces, besides rich private tombs were found. Here Weigall, Ayrton, Garstang, Currelly, Mrs. Firth and Mrs. Cockerell all began their archaeological studies. We had now consolidated our view of civilisation through the dynastic ages and three periods of prehistoric life. After this there remained the filling up of details during the next decade.

Maspero having withdrawn the promise of work at Saqqarah, I was suddenly obliged in 1904 to fall back on Ehnasya, and work out the temple site there which did not materially advance us.

Sinai was an interesting adventure in 1905; we had to march six days into the desert and keep a camp of thirty workers there for some months. The results were manifold. We completely copied all the monuments, finding many unknown before; obtained an insight on the organization of the Egyptian mining expeditions there recorded; and found a new script used by the Semitic levies, mingling a cursive writing of their own with some borrowed hieroglyphs.

In 1906 the Wady Tumilat was searched. Beginning at Tell el Yehudiyeh, we found the camp of the Hyksos, buried under later ruins, and traced it round; also a few Hyksos tombs, the only ones recorded in Egypt. This gave us some footing between the xiith and xviiiith dynasties. Of later times, we traced out the new Jerusalem which was set up by Onias, and thus confirmed the record of Josephus. Going on into the Wady Tumilat, we pitched at Tell Retabeh, and found that it was a city of the xviiiith and xixth dynasties, with a temple of Ramessu II, and the only city of that age between the land of Goshen and Pithom; this fixed it as being the treasure-city of Raamses.

Hearing that a tomb of the 1st dynasty had been found at the south of Gizeh, and that ground there was to be had, we pitched on that in 1907. There we obtained much more of the 1st dynasty, exactly dated, beside finding a great mastaba of the iind dynasty, and one of the largest sculptured tombs of a late age. Moving on to the south, we cleared the cemetery of Rifeh near Asyut, and found the long series of pottery house-models of the ixth-xith dynasties, which showed all the details of the country houses and their furniture. Such were placed for the soul by the tomb, and they presented a view of the peasant life of which nothing had been known. Firth began his career on the Gizeh work, and Ward, of the Edinburgh Museum, and Ernest Mackay joined me this year.

Next year, in 1908, we began by clearing a late temple of Athribis, near Sohag, and found the only private tomb with painted horoscopes. I copied and planned many tombs of the Old Kingdom, and we searched the late Roman town near the White Monastery, and found the site of the first great church; this had been removed and the material re-used in building the Monastery Church. All this was while we waited for the water to subside at Memphis, where we hoped for monuments of historic importance. Here we began the heavy task of clearing part of the great site of the old temple below water level. The chances of results kept us at this for six years. Such work below water level was a novelty, and needed close organizing. The ground was lowered about two feet, to just above water: a drain was cut through it, and then

pumped with large rubber pumps day and night by four gangs of men, so as to keep the water two or three feet lower. Then each day a square pit was sunk by men digging and baling into the canal; this went down six or seven feet until the water squirted in too quickly for the buckets. The hole was then abandoned, after going ten or twelve feet below the surface, and another pit was sunk alongside, next day. We cleared many acres of the temple site, finding the colossal alabaster sphinx of Amenhetep III which we set up there, also a granite sphinx of Ramessu II, now in Philadelphia, and another colossus of that king. But no historical results of value were reached before Maspero stopped the work by larger claims on the proceeds. It ought certainly to be done, but could not be worth while under the present claims of government. Wainwright began his career in this work.

For the early season, in 1909, we went to Qurneh, and found two historical steles of the xith dynasty, and a perfect burial of the xviith, with a gold collar of a new type. It is only kin to the remarkable collars found in Sweden, and is on the same standard of weight, but the original source of all these is yet unknown. The ruins of the temple of Sonkh-ka-ra of the xith dynasty were cleared, and the pieces of his *sed-heb* statue found there.

We began next season, 1910, by returning to Meydum, to open the mastabas, which were yet unknown. The great stone mastaba contained a granite sarcophagus finer than that of Khufu, but had been opened long before by some one who knew the plan. The mastaba of Nefermaat and Atet had been utterly plundered, and the body of Atet broken to chips by the very men who closed the tomb with liquid mud poured into the passages. We tunnelled under the pyramid up to the face of the inner core, to see whether there were any shrine on the inner face, but we retrieved nothing except the quarry dates on the stones.

The early season of 1911 was occupied, at Maspero's request, by going to recover more of the Hawara wax portraits. So many were found that we issued a portfolio of 24 of the finest of these and portraits found before: this gives the public an idea of the skill which lay in an out-of-the-way province during the iind century. The Labyrinth ruins were also searched, and two colossal granite shrines with figures of Amenemhat were found. Some pieces of figures of the gods are the only divine statues known of that age.

The year 1912 was marked by beginning the great cemetery of the early 1st dynasty at Tarkhan. This opened to us the junction of the native and the intrusive dynastic race, and gave us a large variety of the domestic productions. In the next season, 1913, two large mastabas were found, with many varieties of fine linen of the 1st dynasty, in perfect condition, and of great interest in the history of weaving. This site enlarged our view of the actual life, and of the great timber houses which belong to the rise of the dynasties. Lawrence, of Arab fame, and Engelbach joined us in this work. Heliopolis was also attempted, and another Hyksos camp found, like that at Yehudiyeh; much of another granite obelisk, of Tehutmes III, was recovered by deep digging; but further work was stopped by the raising of the government claims.

In 1914 we returned to Lahun to search round about the pyramid. The surroundings were exhaustively cleared, and six great rock mastabas found, only one of which covered a tomb. Two other great tombs were opened, but both had been plundered of everything that was obvious. In that of a princess, however, a recess full of hard mud contained a mass of jewellery which rivalled

that of the celebrated treasure of Dahshur. This gave us in some respects a fresh view of the skill of the xiith dynasty, and the half of the treasure granted to the School, enabled the outside world to appreciate the beauty and refinement of the craft of this age. The Bruntons began excavating in this season.

Then the terrible blight of the Great War fell upon us, sweeping all our students into its grasp. I was refused for any service, and was ordered to keep to the College. So I was able to carry out my intention of thirty years before, that when I was sixty I would write up a library of archaeology. I had already done one volume, on Amulets, and now it was possible to get the time to write up and illustrate the volumes on Name Scarabs and Cylinders, Tools and Weapons, Prehistoric Egypt, Buttons and Design scarabs, Weights and Measures, Glass Stamps, and Objects of Daily Life, all now published; also to write Ushabtis, Stone and Metal Vases, Funeral objects, Glass and Glazes, which yet await publication. The twenty years' work since I came to University College had carried back our knowledge from the xiith dynasty to a full view of the 1st and iind dynasties and of three prehistoric ages before that, and had linked Crete with the 1st dynasty.

It was not possible to resume digging after the War till 1920. Then we went back to finish the clearance of the Lahun cemetery. There we found a large area of the 1st and iind dynasties with a variety of types of graves, which added to our idea of the extent and variety of custom in that age. It is strange how long Egypt was explored without finding any early remains; but when once familiar with the Tombs of the Kings, there followed similar discoveries at Gizeh, Tarkhan, Lahun, Sedment, and again at Abydos.

After searching the desert south of Lahun, we settled at Sedment in 1921. The place had been given up by two previous parties as being hopelessly exhausted. However in the course of clearing the country southward, it lay in our track. Here we recovered large untouched tombs of the iind dynasty, with all their vases of stone and metal, the finest wooden statuettes of the vith dynasty, an abundance of groups of servants of the ixth-xith dynasties, and the finest painted stele of the xviiiith dynasty, beside a multitude of other objects. These were welcome additions to our knowledge of those ages.

Knowing that some more graves like those of the 1st dynasty had been found at Abydos before the War, we asked for a concession to return there in 1922. Thus we found the three great squares of graves of Courtiers of the 1st dynasty. These amplified our knowledge of the ivory carving and flint work, beside the engraved copper tools of that age. From there we went on to try if anything could be found at low levels at Oxyrhynchos. All that was accessible was Roman work of a theatre, with the oldest spiral stair newel, and tombs of the age of Justinian which had interesting details of sculpture. Some of the earliest Hebrew papyri of the iind century were found in the town, while, on crossing to the other side of the Nile, we saw in a re-used tomb a large quantity of Aramaic writing. This proved to be the records of a family, probably Jewish, settled here as early as Tirhaka, that is, in the reign of Manasseh a century before the fall of Jerusalem. Miss Caton-Thompson started her prehistoric work here, and Bach joined us.

In 1923, which I spent writing in London, the Bruntons with Miss Caton-Thompson, Starkey and Bach went to Qau and worked north of that. The great result was the finding of pottery different from any known before, which

Miss Caton-Thompson, in the next year, proved to be earlier than all the prehistoric civilisations yet known. From the district in which it was found, we named it the Badarian. The Coptic papyrus of St. John's Gospel, the earliest after the Vatican M.S., was discovered in this year.

In 1924 I went out to settle at Qau while others went on with Badari. The examination of the great rock tombs of the Uahka family proved that they were of the ixth or xth dynasty, probably of Nubian type, and that the family was of Galla origin, from whom descended the great kings of the xiiith dynasty. This greatly helped to consolidate the vague history of that age. I also discovered many very ancient human bones, almost certainly palaeolithic, for which we yet await geological discoveries in order to assess their position. Wheeler joined the work here.

Having much writing in hand, I spent two years in London, while in 1925 and 1926 our expedition was working out the Badarian and early Fayum cultures. The position in Egypt was unhappy under new and impossible regulations, the scope of historical discovery was almost filled up by all that had been done, and in every way it seemed more important to take a fresh field on the borders of Egypt in contact with Palestine civilisations. There we could hope to follow out the Egyptian rule in Palestine, and so fix the age of each of the native cultures, which was but vaguely known. This has proved to be the most fertile source of Egyptian history.

In 1927, therefore, we sampled the mound of Gerar, and recovered six successive town levels, from the Persian to the xviiiith dynasty, dated by the Egyptian remains. This provided an exact dating of all the pottery, giving a key to the history of the rest of Palestine. The furnaces and tools gave the early history of iron, and the general antiquities supplied a much needed basis for the archaeology. Harding began to work here.

After this the great frontier fortress of Beth-pelet has been worked in 1928 to 1930. It has filled up the outline of the Hyksos period, which was scarcely known in Egypt, and also of the Philistine civilisation, beside opening a wide range of the palaeolithic and neolithic ages. The historical place of the Hyksos has been fixed, and the chronology explained. Meanwhile Brunton, branching from our work, has found the Tasian age, the oldest yet defined in Egypt. In book work also advances have been made, Duncan has incorporated all our results with those already known, in a general corpus of Palestine pottery; and my forthcoming corpus of decorative motives traces the links of early civilisations. Next year, I hope that I may unearth more of the Hyksos civilisation. Miss Tufnell, Colt, and Myers, began work here.

In this outline, only those discoveries have been glanced at which built up our knowledge of history and culture, and many others have been passed by. Similarly, only one quarter of the students of the School who are now continuing such work, have been named.

We have paused to look back on the landmarks of stages in our knowledge during the last fifty years, and to look forward in faith that the next fifty years will see the joining up of our knowledge of all the east, out even to the Indus; thus the view of civilisations will be carried back into continuity with all the earlier ages of stone working, as one great prospect of the past of mankind.

FLINDERS PETRIE.

A PHARAOH OF THE OLD KINGDOM.

IN the collection at University College, London, there is a head (Figs. 1, 4) which has never received the attention it deserves. It was found by Professor Petrie in the temple of Koptos (Petrie, *Koptos*, pl. v, p. 11). It lay under a pavement made of sculptured slabs of Antef Nub-kheper-Ra, which had been re-used as



Fig. 1.

Fig. 2.

pavement blocks, apparently in the xiith dynasty. The material of the head is hard yellow limestone; the top of the head has been completely broken away, leaving a flattish surface; no part of the neck remains. The total height of the fragment is 8 cm.; the height of the figure, if in proportion with the canon of the Old Kingdom or Middle Kingdom, would be about 68 cm. if standing, but correspondingly shorter if seated. Professor Petrie called attention to the difference in the finish of the two ears; the right is carefully worked and stands out from the head like the natural ear, while the left is hardly more than roughed out; Professor Petrie suggested that this was done because the figure was part of a dyad. There is also some evidence for its having been an enthroned figure, for with it was found another fragment of the same kind of yellow limestone, sculptured with the design of the *sma*-sign with entwined lotus and papyrus (Fig. 5), the usual ornament on the side of a royal throne.

The head is that of a king, as the place from which the uraeus has been broken is very evident. At the back the rectangular support of a statue can be seen; such supports were known in early times for both standing or seated

figures. The headdress appears to be a turban wound in many folds round the head. As the top of the head is now broken away, there is no indication as to which of the royal headdresses was represented. I have already pointed out (*Anc. Egypt*, 1926, p. 36) that the crowns of Upper and Lower Egypt were probably turbans. From the shape of this headdress at the back, I suggest that it was the Red Crown, for the curve at the back of the head could not follow the line of the White Crown.

The lines of the headdress might at first sight be thought to be the beginning of the ordinary close-curved wig of the Old Kingdom, which had been left unfinished. The remains of the uraeus prove that the head is royal, and the close-curved wig is unknown for a king. A turban is therefore the only possible explanation.

The date of this interesting fragment is unknown and can only be recovered from internal evidence. It was found with pottery and other objects of the



Fig. 3.

Fig. 4.

Proto-dynastic period under the sculptured slabs of Antef Nub-kheper-Ra, which had been laid face downward to form a pavement in the sanctuary of the Middle Kingdom. It therefore dates back to an early period. In style the face is that of an Old Kingdom Pharaoh, short and broad, the eyes well below the brow, the fossa not much elongated, the facial muscles well defined, the mouth straight with short upper lip, the ears true to nature in size and position, the uraeus flat against the head. Like all the best work of the Old Kingdom there is no exaggeration, the sculptor was one of the great artists who flourished in the ivth dynasty, the best period of the Old Kingdom. When compared with the portraits of the Pharaohs of that dynasty, the fragment so closely resembles the diorite statue of Khafra (Figs. 2, 3), especially in the side view, that it is more than probable that it is another portrait of that great king. The shape of the mouth and nose, the form of the cheeks, the setting of the eyes, the curve of the brows, are the same in the diorite statue and in this fragment. The material of the fragment, beautiful both in texture and in colour, would be appropriate to the Pharaoh who chose diorite for his funerary statues.

The fragment of the throne, if really belonging to the statue—as the material of which it is made, and the position in which it was found, would imply—is a piece of evidence not to be neglected. On the diorite statue, Khafra's throne is sculptured with the emblem of the union of the Two Lands in its early form, the plants of Upper and Lower Egypt twining round the *sma*-sign. As early as Senusert I, the design became more elaborate; Upper and Lower Egypt were personified as the two Niles energetically tying their respective plants to the *sma*. In this fragment the early form of the design is found; and the delicacy of workmanship and form of the lotus-flower not only points to the ivth dynasty as the period, but is almost precisely the same as on the throne of the diorite statue of Khafra.

M. A. MURRAY.



Fig. 5.

ROWING IN THE XVIIITH DYNASTY.

THE methods of propulsion by oars of the ships of Ancient Egypt appear to have undergone various changes at different periods, as may be noticed in the tomb paintings, and temple reliefs, of the successive dynasties. In the temple at Deir el-Bahri there is shown a style which is different from that used anywhere else in the world. As this style seemed so peculiar, an experiment has been carried out, in an endeavour to reconstruct the stroke that was used. This experiment was more successful than was anticipated, and it may be of interest to put on record the method in which it was carried out, and to state the deductions which may be drawn from it.

Briefly put, it was noticed, in the drawings of the reliefs at Deir el-Bahri, representing incidents in the history of Queen Hatshepsut that, where scenes depicting boats were shewn, the rowers were represented in different attitudes. It was assumed, for reasons which will be stated later, that these positions were those of various phases of the stroke. The idea was to try and fill in between the positions, and to pass the result through a zoetrope. If successful it was hoped that some wretched slave, who had been comfortably dead for thirty five hundred years, might be brought to life and made to work again. He did.

Before describing the experiment it is desirable to give a brief review of the earlier methods by which ships were rowed.

In the time of the Old Kingdom the rowers face forward, and are shown with their hands apart, in fact the position is just the same as that adopted when paddling a canoe. This style of rowing is the most primitive of all methods, and is obviously the first step that would be taken after man had balanced himself astride of a log, or a bundle of reeds, and paddled himself by using his hands on each side. The transitional stage of this manner of propulsion is still in use, in the hand paddles employed when working up to duck in a gunning punt. The paddling stroke does not require the invention of rowlocks or thole pins.

The next step in rowing is shown in the tombs at Beni Hasan. In the tomb of Amenemhat, Governor of the Oryx nome in the xiith dynasty (24th century B.C.), there are shown two sailing ships towing a barge up stream (plates xiv and xvi). In the leading boat no rowers are shown, but a series of upright hooks are drawn which are presumably a form of thole pin. In the second boat, there are rowers, who face aft; they are standing to their work, with their feet apart and their hands close together. The oars, or sweeps, pass under the hooks, and on the fore side of the upright part, showing that they are obviously thole pins, which were bent over at the top to prevent the oar from being jerked upwards. To use these pins there must have been a loop of rope put round the oar and the pin, in order to transmit the leverage of the oar to the ship. This method of rowing is also shown in the tombs of Chnemhotep

(xiith dynasty) and Khety (xith dynasty). Two positions are shown, one at the beginning of the stroke in which the rowers are standing; the other is at the end of the stroke in which the rowers are sitting.

It is important to notice this point that two distinct positions are shown, and that at the end of the stroke, the rower sat down, an action which automatically lowered his hands and lifted the blade of the oar from the water.

This style of pulling may be seen on the Thames any day, it is used by lightermen on dumb barges. It was used in classical times in the trireme and is the second phase in the development of rowing, the transitional stage is to use a pin, or a notch in the side of the vessel, and to push the oar against this.

Fishermen when rowing a boat alone, and the "daiso" man at Malta, still row in this way; it enables a single man both to propel, and to guide his boat. When the boat is large enough to require several oarsmen, they can exert much more power if they face aft and get their backs into their work; in this case a helmsman is necessary.

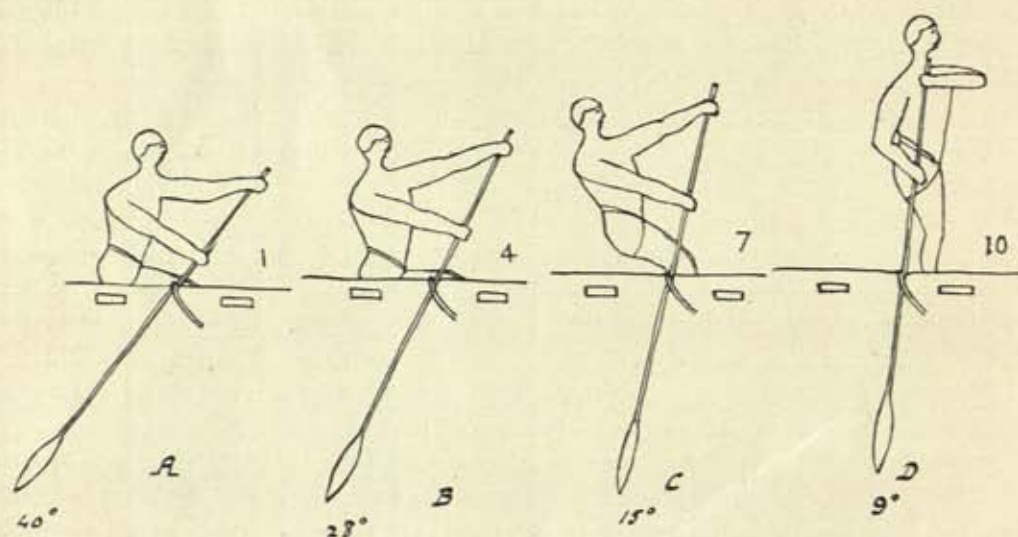


Fig. 1.

Original attitudes taken from drawings of Temple of Deir el-Bahri.

Coming now to the Deir el-Bahri reliefs, ships propelled by oars are shown in the following plates of "the Temple of Deir el-Bahri" by Edouard Naville; Vol. iii, plates 72, 73, 74, and 75 show the expedition to Punt; Vol. iv, plates 88 and 89 show a procession up the Nile; Vol. v, plates 122, 124, and 125 show boats towing a colossus up the Nile; whilst Vol. vi, plates 153 and 154 show the transport of the obelisks down the Nile.

In all these pictures it is possible to find four distinct positions for the rowers, namely two sitting in which the oarsmen are respectively leaning forwards and backwards, also there are two standing positions in one of which the rower is leaning back and in the other his position is upright and his left hand is folded across his chest. These four positions are reproduced in figures A, B, C, and D which have been copied (slightly enlarged) from plates 88 and 89. It is quite obvious that the rower may easily move from A to B by merely swinging back on his seat. Further a simple experiment may be tried with the aid of

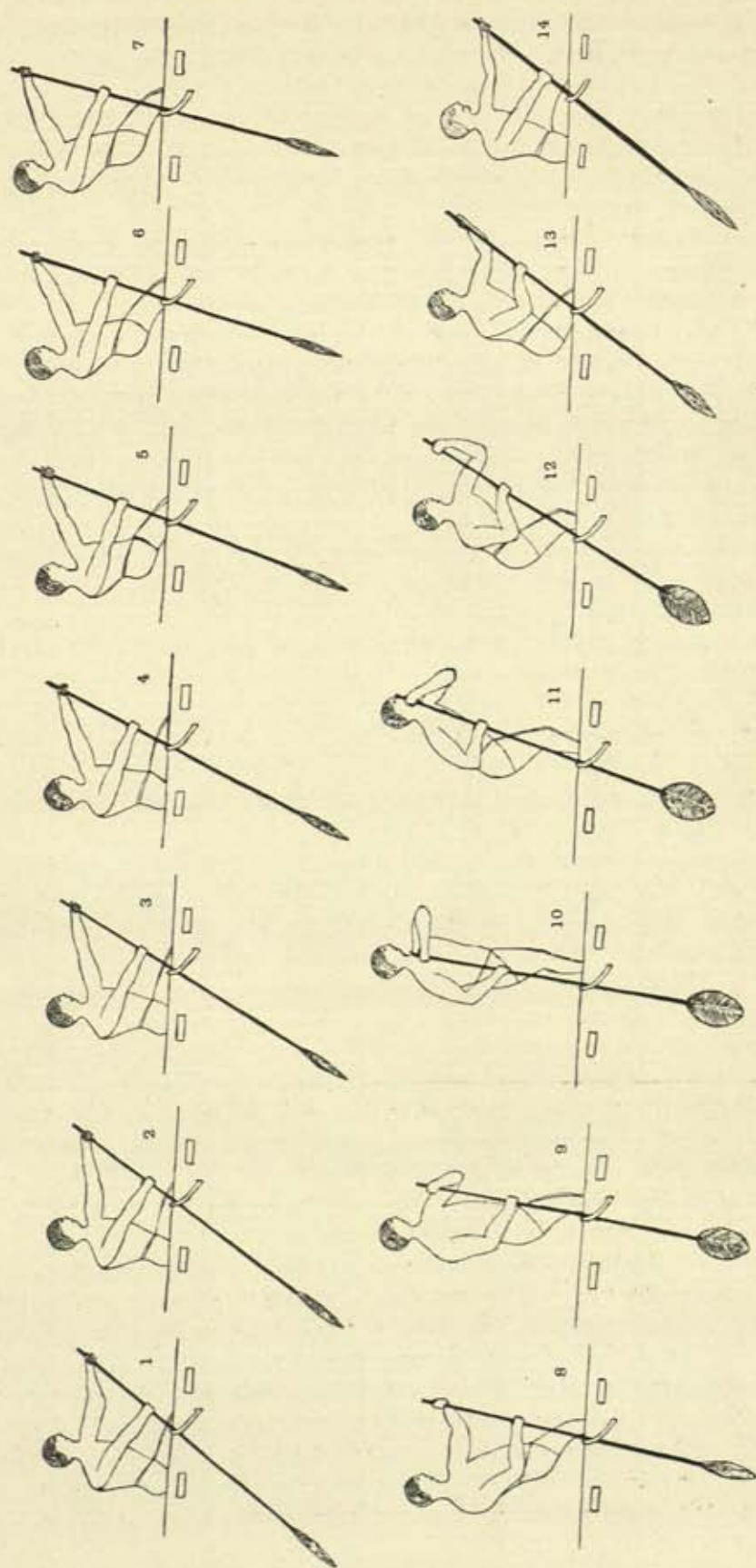


Fig 2.
Series of positions in the cycle of rowing action, from 1 on to the repeat in 14.

a walking stick. If the stick is held with the handle downwards, the hands being in the position shown in A or B, and the handle turned so that it represents the blade of the oar when making the stroke, then when the left hand is brought across the body as in position D it will be found that the handle of the stick has turned through a right angle. That is to say, the blade of the oar is edgeways to the direction of motion, or technically it has been "feathered."

This fact gave rise to the idea that when the Egyptian artist wished to show movement, he drew a series of pictures showing different phases of the action. A confirmation of this assumption was obtained from the drawings in the Beni-Hasan tombs. In the tomb of Baqt (No. 15) on plate 4 of part II, there is a series of five figures of women acrobats in the different attitudes of a jump. The way the arms are swung forward before the feet leave the ground in order to gain impetus for the leap is most natural. In fact the five positions might have been pictures cut from a cinematograph film. In plate 5 there are a number of phases of a wrestling match, though these do not appear to be in such a definite order as the acrobats.

As the practice of showing movement by drawing certain phases of the motion seemed to be well established in the xith and xiith dynasties, it was assumed that this held good in the xviiiith.

The next step was to try whether the four positions A, B, C, and D could be combined into working stroke. The angles that the oar made with the vertical were measured and found to be 40° 28° 15° and 9° . As a trial these were spaced at equal distances along a base line, ordinates being set up to represent the angles. It was found that a fair curve could be drawn through the tops of the ordinates and it was therefore taken that the four original positions were attitudes at equal intervals of time.

Arrangements were made with the officers of the Science Museum at South Kensington to use one of their zoetropes. This machine had only thirteen slots, and consequently the whole cycle of motion (stroke and recovery) had to be got into thirteen pictures. In order to examine the stroke as fully as possible it was decided to allot the first ten pictures to the "stroke," leaving the remaining three for the "recovery." This virtually gives five pictures to the recovery as the first and last positions of the stroke are respectively the final and initial phases of the recovery. The four original positions as drawn by the Egyptian artist thus become ordinates I, IV, VII and X in the curve of angles of oar. Two ordinates were drawn between each pair to give the slope of the oar at each interval of time (see Fig. 3).

The next step was to adjust the length of the oar in each figure to be the same. It was found the B and C were the same length, that A was too long and D a little too short. The length of B and C was taken as correct. (This has been done in the figures shown, which have been enlarged from the originals on plates 88 and 89.) Taking the point where the oar passes through the loop as a fixed point and drawing the oar at each of the original angles, it was found that, by using B and C as definite points a very nice curve could be drawn through the tips of the blade. The locus of the end of the loom of the oar is obtained by measuring a constant length along the oar. These two curves are shown in diagram 4. It is obvious that the two curves are conjugate curves. As a further check the oarsman's head was taken as a circle, and the

position of the centre of this circle for each position of the oar was set out. A curve was drawn through the points so obtained. It may be remarked here that the curve originally drawn was subsequently modified slightly, but the four initial points were never moved.

The position of the oarsman's hands measured from the end of the loom was kept fixed. Thus for each of the six new positions in the stroke there were several points determined. The slope and the position of the oar were known from curves X and Y; and therefore the position of the rower's hands. The centre of his head was more or less definitely fixed inasmuch as it had to lie on a curve shown in Y. The length from the wrist to the elbow, and

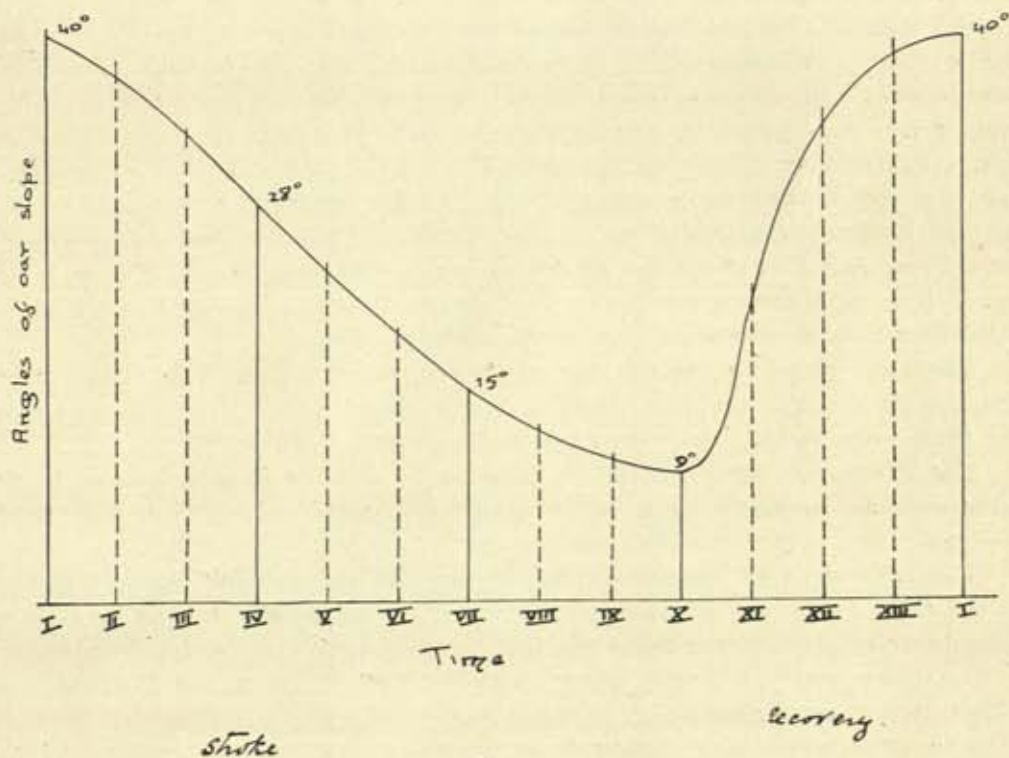


Fig. 3.

Shows the angle of the slope of the oar as ordinates, plotted on a base at equal intervals of time. Positions I. IV. VII and X shown by full lines are the original positions A. B. C. D respectively. The dotted lines show the angle of oar slope at intermediate positions. I to X is the "stroke," X to I is the "recovery."

from the elbow to the shoulder, must obviously be constant in drawings 1 to 7; in drawings 8 and 9, owing to the left arm being moved across the body, there is an alteration in the length of the forearm. With so much known for each figure, it did not require much knowledge of drawing to produce ten figures giving phases of the stroke at equal intervals of time. These phases were checked by superimposing successive figures upon each other and seeing that points such as the small of the back, and the intersection of the body and the left leg, or the point of the right elbow, were lying on continuous curves.

The "stroke" having thus been disposed of, it was next necessary to determine the "recovery." Here there were only the initial and final attitudes

known, namely 10 and 14. A different method had to be adopted. The attitudes of the last part of the stroke were practised in front of a mirror in an effort to determine what would be the natural way of continuing the movements. It was found that the easiest way to get from position 10 to position 14 when holding a stick, was to keep the left arm across the body, and to swing forward from the hips, and then, keeping the body bent forward, to slide into the sitting position at the same time straightening the arms.

Assuming this to be the probable way in which the recovery was made and knowing it to be a possible one; the process of drawing the figures was carried out as in the stroke. A curve of oar slopes using the same time interval as base was drawn more or less at random; curves of locus of the tip of the blade, and the end of the loom were sketched in; also the locus of the centre of the oarsman's head was completed as a smooth closed curve. From these curves three figures were drawn. It must be admitted that the first attempt was not at all satisfactory. However by making the rower raise his right hand, and by modifying the curves in Figs. 3 and 4 a convincing series was obtained at the third attempt. The figures obeyed the necessary geometrical conditions that various points of the oar and the body should lie on fair curves, and that the slope of the oar on a time base should also be a fair curve. The final results are shown in diagrams 3 and 4, and also in the series of thirteen figures that were put in the zoetrope, Fig. 2.

The next step was to try the movement in practice. The figures were mounted on a band, and placed inside the wheel of life at South Kensington. The wheel was spun. There was no doubt about it. He rowed.

The stroke was excellent, it was possible to observe him as he caught the water and, as he came upright, he really did get his back into the work. One could feel that the fellow was pulling.

The recovery was of course much too quick, and one felt oneself listening for the thud as he landed back on his seat. It was owing to the fewness of the number of slots in the machine, that the recovery appeared jerky; if three or even two more slots had been available, the action would have been as lifelike as that of the stroke.

The experiment may however be taken as a practical success, and the "drill by numbers" of rowing in the xviiith dynasty has been reconstructed. The form of rowing was a reversion to paddling, and at first sight seems a retrograde step from the style of the xith dynasty. Further it does not seem to have been used by any other nation. In the Naval action shown at the Medinet Habu temple (about 1190 B.C.), the vessels of Ramses III are being rowed in this style; whereas the ships of the Greeks and Phoenicians are shown without oars. These carvings are more than three hundred years later than those of Hatshepsut.

It is consequently imperative to enquire into the reasons, if any, for the adoption of a peculiar style such as this.

First the oar is close to the ship's side and works through a loop, probably of leather. The oar slides endwise through this loop which has been well greased; leather would have been the most suitable material. The oarsman reaches well forward, throws his weight back on his oar, thus obtaining a quick catch; he then pulls himself up on his oar and so makes the most of his weight; the final movement when he brings his arm across automatically

feathers the blade. The stroke on the whole is a not inefficient one, it can easily be drilled in the head of a dull slave, as the action is automatic; it is a form of movement which would come easily to a native who is accustomed to squat on his hams. A modern European would find this style difficult, but

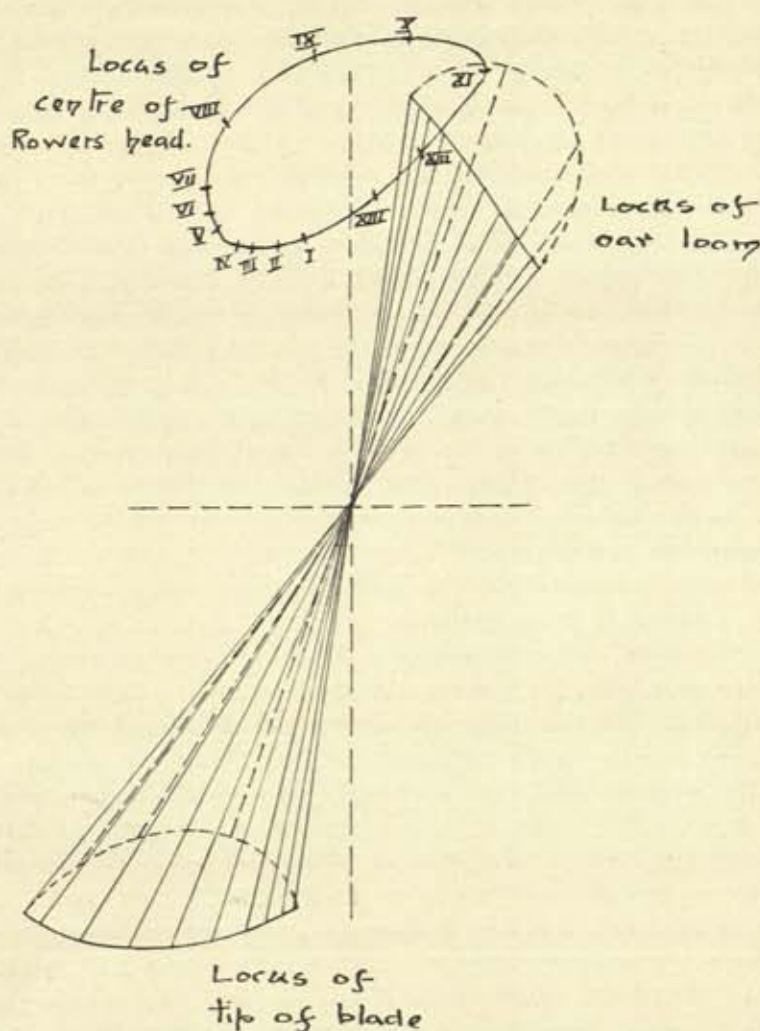


Fig. 4.

Shows the path traced out by the tip of the oar blade and the end of the loom. The full lines refer to the stroke and the dotted lines refer to the recovery. Also the path traced out by the centre of the rower's head giving the position at equal intervals of time. The two dotted axes are position lines through the point where the oar shaft crosses the gunwale. The locus of the rower's head and the ends of the oar are referred to these two axes.

a Chinese coolie would perform it almost naturally. It may therefore be taken that the reliefs at Deir el-Bahri show a real picture taken from life, and are quite possibly positions of the Egyptian drill book on rowing as taught to the slaves. All the other plates quoted show the rowers in one or other phases of this style. There is in addition another position shown on plates 72 and 73,

which depict the arrival at Punt. Here in the case of the small boat which has gone ashore, and of No. 2 ship, the rowers are shown with their hands reversed, that is the left hand below the right; the port side of the ship is still shown; in No. 1 ship no rowers are shown. It is not clear whether the rowers are backing water, or whether they are using the paddles as punt poles, and pushing the ship ahead. On the whole the latter idea is favoured. The point however is immaterial, except as a further confirmation of the view that the drawings are taken from actual life and are not conventional forms.

As the rower had to pull himself up on his oar it is likely that the stroke was a rapid one, probably about 40 to the minute. Also to make the recovery possible, and to assist in the stroke, his feet must have been secured to the deck by loops, or a stretcher must have been fitted *under* which he put his toes. The length of the stroke is only about 30°; that is a short chopping stroke, such as is used when pulling cutters or launches now-a-days in the Navy. This kind of fast short stroke is very suitable for a light draught high-sided vessel which does not carry its way well between the strokes. Such a vessel travels faster with a series of quick jerks than with a fewer number of slow intermittent pulls. The quick short stroke is probably less tiring than the long one, though that would have been a minor point, as a slave had no feelings, and the overseer had a whip with a large knot, as is invariably shown in the drawings.

It would seem therefore that the style produced a stroke eminently suitable to the type of vessel to be propelled.

There were also other advantages. If it is assumed that the paddles were about 10 feet long, (as they are kept close to the ship's side, this would have been ample), then the width of water on each side of the ship necessary for making the stroke would be about 2 feet. That is, a passage say 6 feet wider than the ship would be quite enough. If oars of the ordinary kind were used, these would have to be at least 15 feet long, of which 10 feet would be outboard requiring a width of water about 22 feet greater than the beam of the ship. That is, the channel had to be at least 16 feet or say 10 cubits wider, a consideration in a country that was highly canalized.

Again with the ordinary type of oar the loom comes 4 or 5 feet in board; with the paddle type the space required is the width of a man, not more than two feet. The paddle therefore gives an additional clear space of some 5 feet inside the ship which would be available for cargo or passengers.

Another suggestion which might be worth further investigation is that of the use of the paddles as lee boards. If the rowers took up position D (Fig. 1), either standing, or sitting, the blades would always be parallel to the ship's side and those to leeward would make quite efficient lee boards enabling the ship to sail with the wind abeam, and possibly go close hauled, though the xviiith dynasty sail is not suitable for this latter point of sailing. With the ordinary type of oar such a manoeuvre is impossible, or nearly so; it can be imitated by letting the oars stream aft, in which case the drag would probably counterbalance any advantage gained by checking leeway. This conjecture is purely theoretical as there is no evidence that the Egyptians knew the art of going to windward. There may however be good grounds for thinking that they could use a beam wind, which they might get from the monsoons during a passage down the Red Sea to Punt. The idea is merely put forward as

a feasible one but with no suggestion that it was a practice of the Egyptian navigator.

Summing up, the stroke shown was a fairly efficient one suited to the oarsman and to the vessel, extremely useful in canals. It allowed more room on board, and it had possibilities from a sailing point of view. It may be mentioned in passing that the Chinese have developed a sculling stroke and a specially designed oar or "Yuloh" for use in narrow waters and canals, so that it will be seen that the Egyptian style is not the only special development.

It may however be taken from this experiment that about 1600 B.C. the Egyptians did develop a special style, which is accurately shown in their drawings and carvings of that time. Since this style was specially suitable for narrow waters, and was not so convenient among waves, as the blade never comes clear of the water, it was not adopted by other nations. It appears to have lasted about 500 years, and probably died out during the Libyan period.

C. D. JARRETT-BELL.

ANCESTOR CULT IN ANCIENT EGYPT.

THE preceding note on the *ka* confirmed and amplified, from various sources, Prof. Petrie's identification of it with an ancestral spirit; in this identity we have a well-defined trace of the existence, in ancient Egypt, of an ancestor cult. This was to be expected, for that cult was general, and Egypt in the first beginnings, as is becoming ever clearer, was not an isolated tract, but was in the general current of human development, including religious thought, in her quarter of the world. The practices that seem peculiar to her in historical times are based on primeval principles that guided man in his search after First Causes and the means to control them, from the Palaeolithic age, the earliest in which we find evidence of religious thought. On one side we have the cult of the mother-goddess¹ and on another the traces of ancestor cult, as we have seen above.

Now when Egypt emerged from barbarism and, with the high organization of agriculture, developed her civilisation, certain of the old elements suffered disguise, being masked by the newer ones which had arisen with her civilisation. The worship of the mother-goddess seems never to have been openly recognised in historical times but was merged in that of Hathor, who herself became, later, tributary to the Solar cult, while her functions were usurped by Isis, foremost goddess of the Osirian circle. Meanwhile the primitive ancestor cult took on forms which have somewhat obscured the essential principle; this will perhaps be made clearer by a general glance at the cult. It doubtless originated in fear, the terror which, even today, is so often connected with the spirits of the dead, as it was of old (see Pyramid Texts, Utt. 571). The dead left this world for a vague shadowy one like the Jewish Sheol, the Homeric Hades or the Babylonian Arâlu, where they were destined to remain, miserable and hungry, compelled even to pick up filth for food² unless they were ministered to by the living, with food, drink and clothing; if their wants were regularly provided, they would subsist in a state of well-being, able to aid and protect their descendants as they are still believed to do by many peoples, but if they were neglected they would, as direful ghosts, avenge their misery on the living. Thus the care of the dead by means of funerary offerings becomes reasonable, as a form of insurance for the living: from care given to the dead in general, or perhaps only to the more notable of them, it was but a step, and a natural

¹ See *Journ. Eg. Arch.*, v. XV (1929), pp. 30ff.

² It is interesting to note that this particular feature of misery is found in the beliefs of ancient Mesopotamia as in Egypt.

The conception of the Otherworld as a Sheol survived long in the Egyptian mind despite the paradisiacal aspect of it dwelt on by the priests; see, for example, the quotation given in the Reviews in *Ancient Egypt*, 1928, iii, p. 92:—"the grave 'is deep and dark, without door or window, without light... There the sun rises not and they lie the whole time in darkness.'"

one, for a family to pay duty to forefathers alone; here the tie of affection would enter, making the duty pleasanter and doubtless, in the minds of the descendants, more efficacious; thus the cult of the dead became that of ancestors.

In Egypt it was the son, particularly the eldest one, who was responsible for the periodical carrying out of funerary rites in the mortuary chapel of the father, before his statue. From inscriptions on early tombs¹ and from the funerary scenes, especially that of the banquet, depicted on tombs of all periods, we may see that the sons take the capital part. The Egyptians, a practical, and materially-minded people, deputed to paid ministers the somewhat irksome periodical rites; the Chinese, typical ancestor worshippers, still more practical, in avoiding this expense made the rites domestic and simple and thus more real and intimate.² Offspring were of course greatly desired, to ensure the continuance of the funerary offerings; in China this is a very anxious care, and earnest prayers are made to heaven for children; this was also the practice in ancient Mesopotamia, where literary traces of the cult are frequent.³ In Egypt these traces are not so clear, but a remarkable instance of the reality of the cult is seen in an inscribed bowl dug up by Brunton and interpreted by Gardiner, *Qau and Badari*, I, 76-8; Gardiner and Sethe have recently published a collection of such documents in "Egyptian Letters to the Dead," comparing them with the leaden tablets which the Greeks and Romans buried in cemeteries, calling down on their enemies the curses of the spirits below. We learn from the Egyptian letters that a son, on suffering injury, would reproachfully call on one or both of his parents for help and that dead husbands or wives were also addressed in the same way, by means of letters deposited in the tombs; thus we see that the bond between living and dead was a very real one. Further evidence of its character is seen in the hymn to Senusert III in the *Kahun papyri*, second stanza, l. 3:—"Twice joyful are the forefathers; thou hast increased their portion," where the king is praised for the good that he has done for the ancestors, and, again, in such tomb-inscriptions as that of Amenemhêt of the xviiith dynasty:—"Mayest thou be a protection for thy children for ever and aye."⁴

I have drawn attention already to a publication by the Musée Guimet which is an excellent exposition of the effects of the practice of ancestor cult among civilised people with whom it forms an important part of the established religion. It is equally valuable to know what part it takes in the lives of a very primitive race such as the Veddas of Ceylon, and for this I would refer

¹ For an example, see Breasted, *Ancient Records*, v. I, pp. 86-7.

² The Egyptian ministers were designated by a sign-group read as *hm-ka* and interpreted as the "servant of the *ka*," but this might be rendered as "the warden of the funerary offerings" in accordance with Miss M. A. Murray's reading of the sign hitherto read as *hm* (*Ancient Egypt*, 1929, ii, p. 43) and my suggestion that the element read as *ka* is really *shn*, in accordance with the original form of the sign, signifying "care" or "protection," in *Journ. Eg. Arch.*, v. XV, p. 35, n. 2.

The modern equivalent of those ministers is the chantry-priest whose duty is, by offering regular prayers to the Deity, to effect the welfare of the departed soul, without, of course, any idea of reciprocal benefits for the living. With a similar turn of thought, in the later times of Mazdeism the funerary offerings came to be considered as devoted not to the *fravashi*, but to the gods, that they might cherish the *fravashi* of the dead.

³ See Langdon's summary in Hastings' *Enc. of Rel. and Ethics*, v. IV, pp. 445-6 and R. C. Thompson, *The Devils and Evil Spirits of Babylonia*, v. I, pp. xxvii ff.

⁴ See Davies and Gardiner, *The Tomb of Amenemhêt*, p. 102, last line of the ceiling inscription.

the reader to B. Z. and C. G. Seligman, *The Veddás*, chs. VI and VII, especially pp. 127-149, well epitomized by them in Hastings' "Enc. of Religion and Ethics," v. XII, p. 599. With this folk a tender feeling is dominant while, rather strangely, fear prevails among their neighbours, the Sinhalese, as it does—to take an example made famous by Gauguin—in the Marquesas. With the Veddás, too, we can actually observe the ancestral spirits—*yaku*—in process of becoming gods, a valuable support for that much contested theory which is miscalled Euhemerism.¹

Ancestor cult in the early civilisations eventually culminated in the king, as son of the greatest and strongest of ancestors as well as the magical source of fertility. The king became a god—in China he was the "son of Heaven"—and it is probable that when, in the vth dynasty, the Egyptian king assumed the title "Son of the Sun," it was with the political object of extending to the newer sun-worship, now officially adopted, the popularity of the earlier cult of the great ancestral king, Osiris.

This cult, however, must have retained its popularity, at least among the lay members of the nation, and when, in later times, the state religion was worn weak by age and use and the inroads of foreign influence, Osiris became, with Isis, the outstanding object of devotion. In classical allusions to Egypt, they were always the most prominent figures. Of the pair, Isis enjoyed the greater prominence; she stood for the primeval mother-goddess, ever nearest to popular affection. She had taken over the mother function from Hathor in quite early times, as noted above—a compromise, doubtless, between the newer Osirian cult of the ancestor and the older one of the mother-goddess. A similar compromise between the Osirian and the still newer Solar cult explains a strange incongruity, one of many in Egyptian beliefs. It was conceived that the king was sprung from two different fathers, for though he was formally filiated to the Sun, he was still held to be, at least posthumously, the son of Osiris.

¹ The important part taken by the dead in primitive tribal life is explained with great clearness in chap. vi of "The Savage as he really is," by J. H. Driberg (Routledge, 6^d).

Erratum. 1929, p. 106, l. 24, after "life" insert "and not of mighty lords of battle" from next line.

G. D. HORNBLOWER.

EXCAVATIONS AT GIZEH.

THE Egyptian University began its excavations at Gizeh on December 11th, in front of the south side of the Sphinx. The following day walls came to light belonging to a tomb which we at first thought to be a small one, but the next day we discovered some large limestone blocks bearing hieroglyphic inscriptions, and there was then no doubt that we had to do with an important tomb.

This was confirmed when we saw appear before us, at a depth of about $5\frac{1}{2}$ metres, a very large lintel, bearing the name and some of the titles of the owner of the tomb, and then a second one at a metre below it. Each lintel is formed of a single block.

We then found the façade of the tomb, bearing inscriptions also giving the name and some of the titles of the deceased.

Continuing our work, we found that the tomb is composed of two galleries and a large number of *serdabs*; up to now we have about six large and 14 small ones; this is peculiar, for usually a dead man has but one *serdab*. The chambers discovered in this tomb up to now (including the *serdabs*) are about 60 in number. The part of the tomb laid bare so far is about 120 metres long and from 20 to 40 metres wide.

It may be mentioned that the builder of the tomb followed the surface of the underlying rock, for the façade begins on an elevated part of the rock, and then descends gradually in such a way that the difference in level between the façade and the part laid bare up to now amounts to about six metres. The surveyors who have helped me to plan the tomb have found the proportions to be very exact. We have discovered bases and fragments of 14 columns, of which one in alabaster, is about 3 metres in circumference.

The owner of this tomb was called RA-WER; he lived under Nefer-ar-ka-ra the third king of the 7th dynasty, as is shown by an inscription commemorating the tomb and the date of its construction. His titles are very numerous, including those of High Priest of the Goddesses of Upper Egypt (Nekhbet) and Lower Egypt (Wazet), Chief Secretary of the King, his sole confidant, Overseer of the Wardrobe and Guardian of the Royal Diadems, one of the chief Dignitaries of the King, &c.

In the tomb there were numerous statues of him, about 40 in all, carved in various stones—white limestone, black granite, granular stones, sandstone and alabaster.

Of complete statues we have found only three, cut in a single block of sandstone and all representing the owner of the tomb. The other statues found are mostly mutilated, and the greater number of them are broken up. Two are in their original positions and are in fairly good condition; both are in shrines, the whole being cut from a single block.

We have found two intact heads of granite and four of white limestone, all executed in a very finished style.

A most remarkable object is a statue-base of alabaster, of very fine work. In the sand which covered the mastaba of RA-WER we found a statue representing a seated woman, and a limestone stele representing RA-WER and before him his

mother, with her hands on her breast. The prince wears a panther skin showing that he was a priest. This monument is of the best Old Kingdom work.

In a corner of one of the serdabs were found copper tools used for the foundation; the tools were all agglomerated together by oxidation.

The inscriptions of this mastaba, although very mutilated, are of historical texts, in which it is stated that the owner of the tomb caused the stones with which it was built to be brought from the quarries of Tura.

The clearing of the tomb is in progress; it is the largest private tomb of the Old Kingdom known. The burial chamber has not yet been found.

Another mastaba was found beside it, which seems to belong to a member of RA-WER's family. In the funerary chamber of this little mastaba we found a sarcophagus cut in the rock which a robber had broken open, but he had not been able to carry anything away, having fallen dead beside the sarcophagus. Within this, a valuable necklace still remained. This necklace was composed of two pieces of gold, each of semi-circular form and ending in plaited gold threads of very fine work. Altogether it contained 600 gold beads and about 2500 lapis-lazuli beads. Four canopic jars were with the sarcophagus.

We have also brought to light a rock-cut tomb belonging to a person named ZEFANISUT; the chambers were six in number; in them we found a small statue of the deceased in white limestone and two statues cut in the rock. These latter had been mutilated by robbers, and one was overthrown.

We have also begun to clear the tomb of a great prince named KANEFERT. A part of the hall of offerings is already laid bare. Its walls were adorned with representations of women bearing offerings and water; over each woman is inscribed the name of the objects she is carrying, and the domain from which they came. We have since begun to clear another chamber of this prince's tomb on the walls of which were represented scenes of his daily life. This chamber was re-used as a tomb at the end of the Pharaonic period, for we found in it a number of mummies piled up; these were in bad condition with the exception of one still in its coffin, which bears the name of the deceased with funerary inscriptions and prayer texts. We found nothing in this tomb except the inscriptions engraved on the façade which give the titles of the deceased.

In front of the façade were two vases; it seems that these are not Egyptian, but were imported from Nubia.

Much more work is needed to clear this tomb completely.

A large number of shafts led to funerary chambers, to the number of over 60; most of them are small and not deep. In one of them lay a granite head; the funerary chamber of this shaft is under water.

In two of the shafts we found a few small pieces of gold leaf left behind by the robbers. High up in one of the pits, we found seven leaves which have kept their shape, also a small necklace of semi-precious stones.

We have also found a necklace composed of 86 blue beads and 19 perforated stars in the middle of which there is a crescent.

We found this crescent on the neck of the mummy of a small person in a tomb, between those of RA-WER and ZEFANISUT. We have also found several steles bearing fine inscriptions, and various other objects too numerous to mention. A large number of shafts have still to be cleared.

REVIEWS.

Die Sprache des Pentateuch in ihren Beziehungen zum Ägyptischen. By A. S. YAHUDA. Vol. I (De Gruyter & Co., 1929).

We have been waiting for many years for a book on these lines. It is such an obvious piece of work for one thoroughly acquainted with both the Egyptian and the Hebrew languages to do, that we are surprised such a book has never been written before.

One might naturally expect that in the Joseph and Exodus narratives there might be evidences of the use of original Egyptian documents, or other evidences of Egyptian influence and contact, but it needed an expert in the knowledge of both languages to deal with the problem.

Mr. A. S. Yahuda has tackled it and dealt with it in a thoroughly scholarly manner. That his conclusions may not be accepted by specialists in Hebrew who do not know Egyptian, or specialists in Egyptian who do not know Hebrew so well, is quite likely. That they will not be palatable to many is also perhaps quite to be expected, and Mr. Yahuda's book may receive much severe criticism. A careful perusal of the book, however, can hardly fail to convince an open-minded reader that his deductions are correct, or at least have a sound basis of fact behind them: and of course there will be many who will welcome his conclusions and the further deductions that may be made from them. He practically establishes the fact that the Joseph narratives of Genesis and the Exodus narratives dealing with Israel in Egypt are actually based on original documents written in Egyptian, and drawn up by one who not only knew and was familiar with the Egyptian language of the Court and nobility, but was so scrupulously exact in his narrative that he frequently quotes the actual words of the original.

Whether the documents he used were the actual Egyptian accounts of the incidents recorded in Genesis, or other such documents which the narrator used as models, perhaps cannot be absolutely determined; but there is no doubt left in our minds that the writer of the original document of Genesis was thoroughly intimate with the Egyptian language, its idioms and style, as well as Egyptian customs of the priesthood and the Court, and is careful to choose his language accordingly. Where he found no Hebrew word to express the exact meaning of the Egyptian, he paraphrases or coins a word based on the corresponding Hebrew root. In other words, though expressing himself in Hebrew, he writes as an Egyptian would write.

In the whole presentation of the conversation between Pharaoh and Joseph we have a correct picture of a Courtly conversation of the upper ranks of Egyptian society. Both in his manners and his methods of expression, the

narrator makes Joseph appear as a Courtier at home in Court language, a thorough master of all the niceties of official phraseology. All the turns of expression are permeated with the spirit of the Egyptian language and the manner in which King and subordinates converse bears the stamp of Egyptian throughout.

Very finely does the narrator depict Joseph playing the part of a real Egyptian when talking to his brethren before he revealed his identity to them. The whole conversation between him and Pharaoh corresponds so completely with all that we know of Egyptian Court-setting, with all the peculiarities and niceties of an established Court usage, that the whole incident could only have been depicted in so accurate a manner by a person who had known all these usages from direct personal observation.

This means that the historical setting of these narratives is correct, and implies the probability that the narrative, as we have it, is based on records contemporary with the incidents recorded.

To take some examples from the Joseph narrative: In Genesis xli. 40 "according to thy word shall all my people be ruled" of the A.V. gives the ultimate general sense, but the note suggesting "kiss" in place of "be ruled" is the correct translation. In the Egyptian instead of the usual word *wnm* for "eat" or "feed," the word *s'n* "kiss" was used. The Egyptian idiom was "kiss the food," and here the narrator has preserved the Egyptian idiom. The correct literal translation of the passage is therefore "shall my people kiss their food," i.e., "at thy command shall my people eat."

In Genesis xliii. 34 the Hebrew word for "portions" or "messes" (מִשָּׁאִית) is an analogous formation to the Egyptian word used of "offerings to a god" or "presents to a King" from the verb *fly*, "to lift up," and implies that they were "carried high," "exalted" as we see on monuments where such scenes are depicted. The Hebrew word is formed from (נשא) the verb which means to "lift up."

Great honour was thus paid to his guests by Joseph since their portions were sent them from his own table and were "carried to them as offerings to a god" or "presents to a King" are carried. This seems to have been the practice in Egypt also in the case of distinguished guests. The passage is thus accurately Egyptian in its setting, and the narrator has carefully chosen the word as a direct translation of the Egyptian word used in such cases.

Elsewhere the word occurs in the Old Testament in the sense of "something lifted up," "a burden," "a sign."

In 2 Samuel xi. 8 the word is again used in this sense where "there followed Uriah to his house a portion from the King's table."

Mr. Yahuda regards the use of the word "bread" (לֶחֶם) here in the sense of "a meal" as also indicating Egyptian influence. The Hebrew would speak of "bread and water," "bread and salt," but the Egyptian used always the word "Bread" alone in this sense to express "Meals" and "Meal-times"—and "bread and beer" as the essential part of a food-offering—not only because "bread" was then, as it still is, the staple form of diet in Egypt, but because no other people has ever cultivated the art of bread-making to such a degree as the Egyptians.

In Genesis xli. 41 the expression, "נתן ל", "to nominate to office," and Genesis xlv. 8, "שם ל", "to appoint to office" correspond exactly with the

Egyptian idioms *rdy r* "to give for (i.e. nominate as)": and *wdy r* or *m*, "to appoint."

In the last clause of Genesis xli. 43 the infinitive is used with vav (וַ) "and he made him to be over all the land" though it follows vav with the imperfect. In Egyptian, the author states, the infinitive is used as an emphatic imperative being frequently the opening word of a command or Edict. The Israelite stele e.g. begins with an infinitive as imperative according to the reading of the author,¹ and priestly documents use it continually. Gesenius (Heb. Gr. p. 289) gives four examples of its use in Hebrew from Exodus and Deuteronomy. There is however conflict of opinion as to the use of infinitive as imperative in Egyptian.

Mr. Yahuda regards וַ here as infinitive used as imperative in direct speech, the narrator quoting the exact words of Pharaoh's command instead of throwing it into indirect speech as in the preceding part of the verse. This, he thinks, explains what has hitherto been a grammatical difficulty. It explains also the use of the infinitive in the commandments in the passages Exodus xx. 8: Deut. v. 12: Num. xv. 33.

In Genesis xliii. 16 again the words are the exact words of Joseph reproduced by the narrator, or the words which the narrator knew he would certainly have used.

This use of the infinitive "is a characteristic form of expression which of all other Semitic languages occurs only in the Hebrew": and, "exactly as in the Egyptian, is used in the legal sections as well as the introductory form in festal proclamations, with poetic emphasis."

The author concludes that the narrator here expresses himself exactly as the highest Egyptian nobility were wont to express themselves, and we have here a true tradition which must go back to the time when the Egyptian sense of language and intimate acquaintance with its peculiarities of style and refinements of expression were still fresh in their minds.

Similarly the expression "stand before Pharaoh" in Genesis xli. 46, &c. is a verbal rendering of the Egyptian expression in common use. In Genesis xlv. 1 the "standing ones" are the Court officials and servants on duty in the King's presence" not casual onlookers or witnesses.

But the Egyptian word, *h'w*, here quoted by the author, generally means "bystanders," "crowds," or "masses"; and the word for "Courtiers" is *snwt* which means "surrounders."

The same word occurs in Exodus ix. 16 in the Hiphil form "I have caused thee to stand," i.e. "to live," and in Egyptian the word for "stand" is constantly used in the same sense of "duration of life," especially in poetical passages and prayers.

The careful observation of Egyptian Court etiquette is remarked in Genesis xli. 10: 25-35, where the butler and Joseph address the King in the third person, not the second person. Frequently "Thy person," "Thy majesty," and even the indefinite pronoun "one" is used in Egyptian—a custom which goes back to the earliest times. The same formula of respect is used in the case of Joseph, the Vizier, in xliii. 15, 34.

The word "Lords" as applied to Pharaoh and Joseph in the construct state (Genesis xl. 1: xlii. 30, 33: xlv. 8: 7, 9), the author regards as a Dual

¹ With this, I understand, Steindorff agrees.

Construct, referring to their being "Lords over the two lands." When the brethren address the Steward who was sent after them, however, they used the singular (xliv. 7 and 9).

The use of "Thy servant" or "Thy servants" to avoid the first person in that passage (xliv. 7 and 9) is also typical of Egyptian Court etiquette.

Perhaps one of the most interesting instances is the oath used in Genesis xlii. 15, 16 "By the life of Pharaoh." Swearing by the life of the King, common all over the East, was not so usual in Egypt, but was an oath of unusual solemnity. It was the most impressive adjuration that could be used. In Egyptian, therefore, it is less common than the oath "By the Gods," and used only where the deepest impression is intended to be made.

The words on the lips of Joseph are a clear intimation to his brethren that it is a matter of life and death and as such it was understood by them.

The frequent use of "Elohim," the plural form for "God" on the lips of the Hebrews in the Joseph narrative Mr. Yahuda regards also as characteristically Egyptian and a concession to Egyptian usage. The narrator makes Joseph speak exactly as an Egyptian would speak and Elohim is a direct translation of the Egyptian plural *ntr.w* "Gods," though it may have been even distasteful to a Hebrew.

There is, therefore, a point in the fact that in Exodus the narrator avoids making Moses use the word "Elohim" alone in his conversations with Pharaoh, but introduces the new and more impressive name "Yahveh."

The title given to Joseph (Genesis xli. 43 *נָשִׂא*) "the Vizier," which literally means "a repetition of the King," "the King's double," is exactly the same word as the Egyptian *šnw* (from *šn* = two). Both are derived from the same root in each language. The Dignities and Powers bestowed on Joseph are also exactly those detailed on a tomb inscription of Rekhmara, a Vizier of Thothmes III.

From this inscription and other monuments we gather that the Vizier is after the King the First in the Kingdom, exactly as stated in Genesis xli. 40 "Only in the throne will I be greater than thou." In the King's absence he acts as King, and in his presence as mediator (Genesis xli. 44). He passes on all orders or Royal edicts. He is the medium of consultation, and the supreme Judge in all disputes between officials, as well as in all criminal cases. He carries the King's signet ring, is Head of his house, and Head manager of the Crown lands. Thus as stated in Genesis he was King in everything but the throne.

Similarly from Egyptian representations of the ceremony of installation of the Vizier we gather that the statement of Genesis xli. 42 is quite correct. The Vizier had the King's signet ring bestowed on him. He was clothed in fine linen, and he wore a gold chain of office. It was a further distinction that in acknowledgment of his lofty dignity they cried before him "Abrēk" as he drove through the city (Genesis xli. 43). This may mean that outrunners preceded him shouting "Abrēk," or that the bystanders shouted the word as he passed.

The brief way in which the narrator mentions these (Genesis xli. 42-43), indicates that he was speaking of things well known to those for whom he wrote.

The main significance for us, however, lies not so much in the correspondence of detail as in the word-clothing and forms of expression which plainly bespeak an Egyptian background.

In Genesis xlv. 8, 41-46 Joseph speaks of himself as Father to Pharaoh, Lord of his house, and overlord of the two lands. These expressions mean that he was (1) a Priestly dignitary: (2) House chamberlain: and (3) Overseer of Egypt: and can have been used only by one who was thoroughly acquainted with the Priestly institutions of Egypt and who knew that these three offices were the weightiest and most significant vested in the person of the Vizier or King's Double.

Under the second chapter dealing with Egyptian Titles and Honours in the Joseph narrative, the author explains the threefold duties of Joseph, the use of the dual form (שְׁנֵי) "the two lands" for Egypt: the use of (הָאִישׁ) "The Man" (Genesis xliii. 2) in referring to Joseph: the interpreter (Genesis xlii. 23): the name Zaphnath-paaneah given to Joseph by Pharaoh: the word שַׂר or "Prince" as Title of a high Egyptian Dignitary: the word "Mouth" in Exodus iv. 15 and the use of the royal title "Pharaoh."

Succeeding chapters deal with ordinary expressions and renderings after Egyptian style: expressions where parts of the body are figuratively used: the head: the eye of the land: lip for brim or edge of river: mouth for command, &c.: proverbial idioms and current expressions from the Egyptian: and words borrowed from Egyptian.

In Part II of the Volume eight chapters are devoted to the pre-Egyptian epoch in the Pentateuch and the narratives of Genesis. These deal with linguistic analogies and differences in the Hebrew and Accadian Texts of the Genesis Legends: the Egyptian elements in the Creation narrative, in the story of Paradise, the Fall through Sin, and the "Sin-flood Legend": words and expressions borrowed, or translated from Egyptian or modelled on Egyptian forms of expression.

The closing chapter deals with the preponderance of Egyptian elements: and a few other expressions such as Kasdim, Hiddekel, Hanikhim (חַנִּיכִים Genesis xiv. 14) "trained servants, or dependents"; נָעָרִים "young men" (xiv. 24), and בְּרָכָה a "blessing" in the sense of "an offering" Genesis xxxiii. 11.

The book is bound to attract attention and will well repay a close perusal. It is of special value to the student of the Old Testament language and History, and its conclusions will be highly acceptable to all who desire to see the authenticity of any ancient document established on as firm a basis as possible.

It is one of the most valuable of recent contributions to the constructive criticism of the Old Testament language and literature. An English Translation of the book is in the Press and will, we understand, shortly be issued.

J. GARROW DUNCAN.

Studies in Egyptian Chronology. By T. NICKLIN. Part II. The Sothic Cycle. 8^{vo}, 24 pp., 1929 (Toulmin, Blackburn).

The scheme of Dr. Nicklin's proposals has been given in our number in 1929, p. 35. Here we read Norman Lockyer "gave fresh reality" to the Sothic year by his theory of temple pointing. That, however, had nothing to do with the Sothic year, and those theories are now quite discredited by observations. The history of views on chronology is strangely unknown to most writers, who continually harp on entirely fictitious statements. In reality the long chronology was that of the Greek writers, Herodotus and Manetho, it was

generally accepted by Champollion and his followers. It was not till Bunsen and Lepsius that it was proposed to abandon it, and adopt a position which they thought they understood better than the earlier writers. After abandoning what had long been accepted, every one made a different guess as to what the dates should be. In 1899 Berlin assumed that only the vague year could have been used, and disregarded the solar or seasonal year, and also two other calendars used by the Egyptians. On this assumption the Kahun papyrus either agreed with the long chronology or else gave an impossibly short period. There the trouble remained until now we see that the seasonal year—still used by the Egyptians—would remove the difficulty; the scarabs showed how the Hyksos had overlapped Egyptian history, and we are now free to use the well authenticated dynastic periods which have been transmitted to us. Let us hope we shall hear no more fictions about inserting a Sothic period; it was always accepted until Bunsen cut it out.

It is proposed in this pamphlet, to assume a rearrangement of the months of the calendar to fit new facts. But there is not the least need for such a drastic and arbitrary course. The well known seasonal calendar, by which each of the three seasons are plainly named, agrees with all the facts (see *Ancient Egypt* 1929, June). An equally unhappy guess is made that by "a small lens they would be able in some years at least to observe Sirius rising a day earlier." No lens, large or small, would do that, only a telescope of two or more lenses, and there is no trace of any such invention.

An enormous amount of theorizing is based here on differences of one or two days in the observations. This is out of touch with reality. It would be very difficult to make sure of catching sight of Sirius in the morning glow of sunrise one day rather than the next. Then at different parts of Egypt the observations would vary with latitude. Further there is a matter which has been neglected by all theorists; when the precessional motion shifted the ecliptic on the starry sphere, Sirius would be a very different distance from the sun's course, and hence many days' difference would arise in actual observation.

The final appeal to dates asserted by Albright is futile, as he has based his dates on the Berlin scale, which is the matter in question; it is making the copyist authenticate his master. More familiarity with actual observation, with astronomical complications, and with original M.S. sources would change Dr. Nicklin's views.

Mohenjo-Daro. 4^{to}, 10 pp. (Indian State Railways).

The rigid reservation of all accounts of the great Indian excavations (no Annual Reports since 1925) makes even a railway pamphlet valuable, especially as it is by Mrs. Mackay who has taken part in all her husband's work there. This long deserted city, of some five thousand years ago, was called the "Place of the Dead," Mohenjo-daro, by the present people. It differs from any site in the near east by being built of burnt bricks, showing fine and precise work. A notable feature is the drainage system with vaulted drains, six feet high, beneath the streets. The bathrooms, paved with bricks, and the streets, were thus drained. The lay-out of the houses is in square blocks with straight streets between. As yet, only the later buildings have been cleared, but there are several older cities beneath this, and stonework has been reached 25 feet down in a well. There seems thus to be a series of cities reaching back to

perhaps eight or ten thousand years ago, like the series of pre-flood cities found at Ur.

The sculpture is stiff, and limited in its detail. Hair is closely lined out, but the ear is simply oval. The features are fairly well rendered, and the style is like the much later Arabian sculptures. The robe is covered with the trefoil pattern well known in Iraq. The square engraved seals, with short legends above a bull or elephant, are also closely like seals found in Iraq.

The only bronze figure is of a lanky nude girl, with the right fist on the hip. On the left arm she has 17 and 11 bangles close together, and two on the right arm. They are hardly ornament, but may represent wealth, or the honorific tokens of her many admirers in the past, as was the custom in some other lands. The hair is drawn from both sides, twisted, and then tied together. Another figure, in pottery, is of a woman wearing nine necklaces descending one below the other down to the girdle. The mode of representing them by lines and blobs, and the whole style, is closely like pottery figures of about the xiiith dynasty.

An upright cylindrical vase and cover of silver was found containing a large quantity of jewelry, necklaces, finger rings, and beads of jadeite and gold. The whole was wrapped up in a cloth of cotton, the oldest use of that fibre yet known. Another important connection with the West is that of the weights. Hundreds of such are found, carefully wrought: the usual standard averages within $\frac{1}{2}$ per cent of the Sumerian standard weight, the same as the higher family of the gold standard of Egypt, the oldest standard of the prehistoric age there. Another standard was occasionally used at Mohenjo, equal to a frequent standard in Palestine and in Egypt from the pyramid age. These weights prove what important commerce the people had, and how they were mainly linked with Sumeria, before the well-known Babylonian shekel had come into the field.

The working out of the successive civilisations of early India and of early Iraq will give a marvellous extension of view of the growth and decay of the many stages of man.

NOTES AND NEWS.

HALF-CENTURY CELEBRATION OF FLINDERS PETRIE'S RESEARCHES.

This year, 1930, we have the half-century celebration of Flinders Petrie's researches. It will be marked by various events. This week, a dinner will be given at the Savoy, by Dr. Robert Mond, to a large number of the Professor's colleagues and students, and friends associated in his work.

On his birthday, Lady Newnes' Egypt Matinée took place at the Hippodrome, which was filled by an enthusiastic audience. This was an ambitious pageant, ranging over 8,000 years of Egyptian history, from which dramatic incidents were chosen, and represented in fourteen carefully rendered tableaux and moving tableaux. The cast numbered 81 people and a white pigeon. The scenes were accompanied with ancient music, adapted by Mrs. Julia Chatterton, on replicas of Egyptian instruments. A congratulatory address, signed by many

archaeologists and other savants, was presented by Captain Spencer-Churchill, in celebration of the half-centenary.

The performance opened with the dawn of civilisation, and showed Badarian man, and the prehistoric fresco of Hierakonpolis. Mr. Terence Gray's play, in which Khufu ordains his pyramid, was next acted. Then the *deng* dwarf danced before little King Pepy, the princess of the Lahun Treasure appeared, and various Shepherd Kings; wall-sculptures of Akhenaten were faithfully represented; the dramatic scene of the twelve pharaohs followed. The final scenes led up to the tragic end of Cleopatra and the decline of Egypt.

This matinée was given in aid of the British School of Egyptian Archaeology, which celebrates its twenty-fifth year. It is the first time that an attempt has been made to illustrate Egypt throughout the centuries.

A VISION OF THE AGES, by Flinders Petrie, 8^{vo}, 24 pp. with 12 illustrations, 2/9d post free.

This small book, with blue lotus on its green cover, contains short sketches of some of the chief periods of Egyptian history, illustrated with a few photographs of the more interesting discoveries.

H. P.

The expedition of the British School of Egyptian Archaeology at Beth-pelet, under the direction of Mr. Starkey, Mr. Harding, Mr. Colt, and Mr. Macdonald, has completed the search of the Hyksos cemetery, also of the xviiith dynasty Residency, and cleared a long line of tombs of the Philistine age in continuation of those found in the western fosse of the town. Mr. Macdonald has specially worked ten neolithic settlements, in the earliest of which were found model dogs, suggesting the "dog tribe" of Caleb; this points to the Kenezites being aborigines, two or three thousand years before the Exodus. Various links with the Egyptian prehistoric products are found, and the series ends with a dagger from a fine site of early Copper Age. The chain of types in flint work and pottery will enable us to place these sites in sequence. A full account will appear in the next journal.

The regrettable delay in issuing this part is due to the loss of the MSS. in the post between Rome and Vienna, which was not ascertained for some weeks.

PROBABLE ALTERATION OF DATE OF JULY EXHIBITION.

It was intended to have the Annual Exhibition of antiquities open early in July. There has, however, been so long a delay on the part of the Palestine Government in passing the boxes, that it will not be ready until Wednesday 9th July.

The Exhibition will be chiefly of Hyksos and Egyptian discoveries from Beth-pelet, Palestine, with a large collection from the Neolithic settlements. Admission free, without ticket.

It will be open from July 9th to 31st 10-5 (and evenings of 15th and 25th 6.30-8 p.m.).

THE BUILDING OF A PYRAMID.

THE difficulties of constructing the pyramidal form which, when finished, left no place to support the masons engaged on it, have long been talked about vaguely; many impossible processes have been suggested, but the difficulties have never been met, from start to finish. The latest publication of architect and engineer combined has provided a chapter on "Pyramid Construction," but they have not attempted to clear up the essential difficulties nor to show how such a result was possible.

First we should take account of the means that were available to the Egyptians. That they used *earth banking* on an immense scale, as a working platform, is certain (1) from the remains of such banking at one of the later works, the Ptolemaic pylon of Karnak; (2) the description of a long sloping bank 1260 ft. long, 94 ft. wide, and sloping 103 ft. up the sides, for erecting statues under Ramessu IV; and (3) a great earth causeway from a quarry at Qau, divided by cross-walls of brickwork filled up with earth. Such a system was recently revived with full success at Karnak, in the repair of a hall, where it was filled up with sand to form a working platform on which to lay the roof beams.

Another principle was the employment of *large teams of men*, moving quickly by main force. This is instinctive to the people at present. When I needed to move a block of two or three tons, our men would get out the thick ropes, lash them firmly round it, smooth out any hollows in the way, and then, calling fifty men off work a little before sunset, they would all take places and walk away with the block, over any rough ground, up the bank of old wall at Abydos and down the other side, without any hesitation. The transport of an immense colossus by a team of 172 men is a well-known picture of the xviiith dynasty. The great levy of thousands of men during the inundation is essential to any programme of pyramid work. The choice lies between a slow method with few men in modern times, and a quick method with full power anciently.

Safety was essential for the Egyptian; the large numbers of peasants could not be expected to deal with risky work; the methods must be fool-proof, so that nothing can break away by oversight, and no catastrophes lie in the way. Any apparatus must have been of the simplest kind.

Appliances were very few. The lever and the roller were about all that were used. There was no pulley till Roman times; for raising sails the ropes merely ran through loops of rope, not over pulleys: any lifting by haulage over a pulley is impossible. Rocking up on two piles of blocks placed near the middle of a long beam may probably be expected for small amounts of motion. Large lifting could be done by using slopes.

Such being the means, the results obtained delimit the possible ways of working. The transport must have been rapid; 500 blocks, each of some tons, had to be brought over from the quarries and built into place every day. Thus at every stage of the work 500 blocks must have passed on in a day to the next stage, and each stage manned sufficiently for this. A wide approach and wide working face was essential, no narrow tracks up pyramid faces would do, except for a hundredth of the work at the top. The flow of movement must have been as intensive, and as certain not to break down, as in mass-production engineering today.

The method must have allowed of placing all the casing in position with finished face, and putting on the top stone about six feet square. It must have allowed for accurate building to plan, without any loss of squareness or of true angle from the base upward. It did provide for laying the casing ready faced, for at the largest blocks at the base (where dressing in place would be most expected) there is a small difference of angle between the blocks at their junction, proving that the faces have not been even smoothed since being built together. The method must account for the importance of a deeper line of casing specially laid up the middle of each face.

A great question is the meaning of having structural faces at 75° in the mass, beneath the casing of 51° . Such faces exist at the Step Pyramid (iiird dynasty) without any 51° casing, so far as is yet ascertained. There are internal faces at Meydum (iiird dynasty), and at Abusir (vth dynasty), also in the Pepy pyramid (vth). At the last no doubt they were structural, as the bulk was merely of chips thrown in, and needing retaining walls. At Meydum they may belong to an early stage of design, like the Step Pyramid, afterward re-modelled by a 51° casing. No such internal faces are known at the Great Pyramid or Second pyramid, probably not at the Third. If they existed there would be some trace visible in the core blocks, especially in the deep hole made in the south face by Howard Vyse. For these pyramids we need not take internal faces into account. A true remark has been made that any system of building in successive coats would be extremely wasteful of the slopes of ascent, which would have to be reconstructed for each coat: the conclusion has therefore been drawn that the internal faces at Abusir were all in progress together at the same level, and their purpose is for binding the structure, and in a traditional succession from the primitive mastaba.

The design of the Great Pyramid shows no trace of any enlargement; the passage system demands almost the full size from the first, and the modulus of 40 cubits following on that of 25 at Meydum marks the design as original, and not increased by any small addition. The earth ramp needed for raising the stones must have been of great size, almost of the volume of the pyramid itself. It could not be shorter than shown here (Fig. 1) or the final slope would be too steep; it could not be narrower because a full sized front was needed to get up the stones for the lower courses, about 50,000 blocks in each course. Also for the height the base must have been as wide, as we can hardly suppose that the sides of the earth bank could be maintained for 400 ft. high, with a brick facing steeper than 51° . It would be possible for the lowest corners to have been narrower, making the foot width more like the top width, but it would be a small economy at the loss of having a much steeper slope for the earlier ramps. It would be a great facility in handling the 50,000 blocks *per* course

to have as gentle a slope as possible, as that would enable the blocks to be moved up it much more rapidly. So practically the full width at the foot, and low grade slopes at first, seems much the most advantageous form.

The successive heightening of the bank as the work grew would probably be done by moving the stones forward on it till half was clear, and raising that, as the stone moved forward, till a whole course was moved in and laid. Thus the lower part would consolidate before the stone for the next course arrived on it; in fact there would be continual waves of stone work and earth facing, alternately moving forward up the bank.

The height of the ramp is a difficult question. Certainly it cannot have continued to the top of the pyramid, as there would be no room to work on it, and if once wider than the face it would need an immense deal more earth on the adjacent faces. The pressure of the facing wall at the bottom would be relieved by its banking against the earth filling; a sheer wall on its own

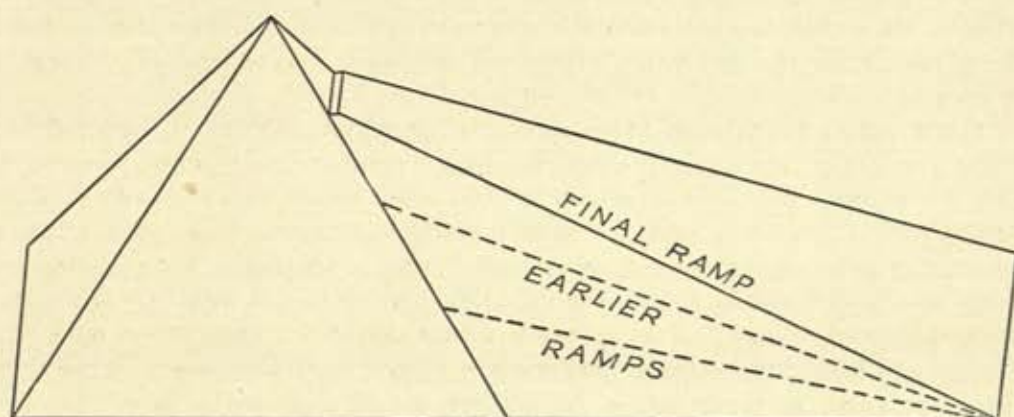


Fig. 1.

footing could hardly be over 150 feet. There was a wall of 92 feet at Memphis, and chalk will crush with 600 feet of its own height; somewhere between these must be the limit for mud brick. So if we allow that the brick facing and bank rose to 380 ft., or 100 below the apex, it would be as far as is likely. At this level the face would be 150 feet wide, which would allow a safe margin, so as not to put weight near the edge. Above that level the raising must have depended on a support of stone.

Next we must consider the order of the building. When stones are raised up a slope to the building level, the obviously simple method would be to place the course of casing in position round the edge, and then fill up the space with core blocks. This method may explain the close fit of the vertical joints. If a block were a few feet inside the position and were slid forward, along its side joint, the joint face of the fixed block could be brushed over with fresh plaster in front of the sliding block and immediately covered as that ran along. The flat back to the block would enable force to be applied.

How then could the casing be placed truly in position? As already stated, the casing at the base was not dressed finally when in position, as the faces are slightly out of plane. The stone was cut to the angle before laying, though perhaps the feather edge below might have a little excess to save it, easily

ground off later. The angle was first of all accurately set out on the rise up the middle of the face, which was deeper and therefore more carefully built. For this the stone face below would be the first guide, and could be checked by measurement across the pyramid. Knowing how the Egyptian marked out axes on his stone work, and how in the middle of the Hawara pyramid the axis had been marked out with supplementary signs at 2 cubits each side of it (*Kahun*, p. 14), it is most likely that axis lines were kept up carefully during the construction. At every 14 cubits up, the face must be 11 cubits nearer to the cross axis. When once a stone was put in its true place on the mid-face line, then all others could be adjusted by sighting over that line to the base, for every part of the face must lie in the plane defined by the mid line and the base. The corners also could be directly measured from the axis lines. Three faces would be always clear and visible, with finished surfaces up to date. The face covered with the earth ramp might perhaps be left in the rough, but it would be much more difficult to dress it truly while the lower part was invisible. It would be easier to set the mid line true by measurement from others and from the axis, and then put the rest of the course in line to the corner.

Quite different problems came in view (Fig. 2) when within a hundred feet of the apex. The brick ramp could hardly be trusted not to crush; moreover it would be too narrow for safety, as the edge might break away. A stone staging of some kind would be needful, but could not suffice when a great amount had to be moved for the lower parts. Such a staging could stand on the casing stones left untrimmed and square, except down the mid line and edges which would be needed as a guide to future dressing down. Then when the apex was in place, the staging would be removed step by step and the face dressed smooth. To work safely, the staging would need to be more than one course wide, and to be used mainly sideways. On planning, this results in a series of side shifts and reversals. It therefore comes out perfected as a stone ramp zig-zagging up the face. If we allow for a working platform 20 feet wide and a ramp 20 feet wide, it would be quite practicable for getting up enough stones to finish the upper courses. Starting at about 1000 stones in a course, by the time the ramp and platform had to be reduced to 10 feet wide, there would only be about 60 stones to a course. It would hardly be practicable to carry on a regular ramp higher than 12 feet below the cap stone; the last six or eight courses would be left to be raised by direct levering in a safety pit in the middle, flanked by safety walls on each side. Last of all, the cap stone six feet wide (according to a xiith dynasty example) would be levered up on stone blocking outside the completed faces, on a sort of pedestal of blocks until it reached its proper level. From a platform thus outside the pyramid face, it could be slid forward on rollers until nearly in place. Then the mortar for its bed would be pushed forward beneath its edge, and on moving the block finally into position the rollers could drop into holes left in the core. It seems reasonably possible to complete the building at each level in this manner.

The staging of stone would then be taken off, and the top courses of that face trimmed down to the slope, about four feet at a time. The stones and the brick of the ramps would be taken down and stacked ready for the next pyramid.

In the diagram the front view of the stone staging is drawn across the face, with the depth back of each platform stated in feet. At the side is the sectional view of the staging, showing the top and face of each stage. Below is the horizontal plan of all the staging, showing the manner in which the reversals meet.

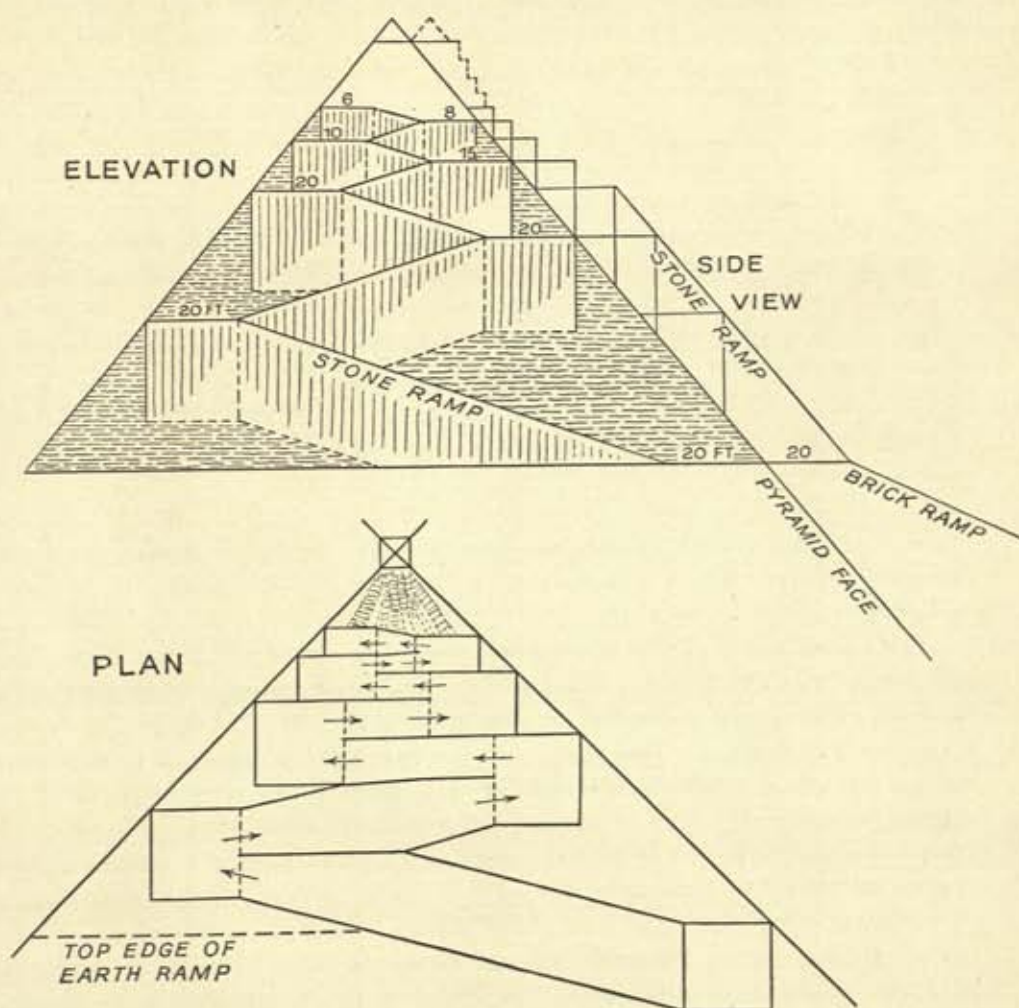


Fig. 2.

THE SLOPES OF PYRAMIDS.

There has been confusion in various writers on the subject of the angle of slope of different pyramids, owing to confusing theories with actual observations. The facts, as far as I could ascertain them on the spot, are set out below, with the probable error \pm below each statement. This does not mean the limit of uncertainty as some writers state, but the limit within which half of the observations lie, the amount which is as likely to leave the true value within it as beyond it. There follows the most likely theoretical angle, and the proportions which produce it.

	Observed	Theory	Diff.	Proportions
Great pyramid	51° 52' ± 2	51° 50' 34"	1' 26"	14 on 11
" " passage	26° 31' 23" ± 5	26° 33' 54"	2' 31"	1 on 2
Second "	53° 10' ± 4	53° 7' 48"	2' 12"	4 on 3
Third "	51° 10' ± 2	51° 20' 25"	10' 25"	5 on 4
Ninth "	52° 11' ± 8	52° 7' 30"	3' 30"	9 on 7
South Dahshur low . .	55° 1' ± 5	55° 0' 29"	31"	10 on 7
" " high .	43° 5' ± 6	43° 1' 33"	3' 27"	14 on 15
" " small .	44° 34'	44° 25' 37"	8' 23"	10 over 7
Lahun	42° 35' ± 3	42° 30' 38"	4' 22"	11 on 12
Hawara	48° 45' ± 3	48° 48' 51"	3' 51"	8 on 7

Here there are 5 with differences less than the probable error, and 4 with differences greater, which agrees with what is likely in a series of intended connections.

The frequency of 7 in the proportions, six out of 10, is naturally due to the division of the cubit in 7 palms, so that the proportions were naturally set out in even numbers of palms. The proportions are, in all but one, a vertical rise on a horizontal base. The exception, 10 over 7, is a slope of 10 over a vertical height of 7: or perhaps 7 slope over a base of 5, resulting as 44° 24' 55". Although there is a wide chance of selecting some even proportion for an angle, yet the fit to the observations is as close as theory requires, without any chance fit, and the predominance of 7 is very unlikely to be accidental.

A check on such proposed proportions lies in the dimensions of the pyramids. If the Great Pyramid was to be as 14 on a base of 22, what was the modulus which went this number of times in the height and base length? This unit of length is 40 cubits. The angle of the pyramid of Meydum, next before that of Khufu, is not very accurately defined, but is certainly the same as that of Khufu. Its modulus is 25 cubits.

In order, therefore, we may set out similarly

	Ratio	Modulus
Meydum pyramid . . .	14 on 11	25 × 20·662
Gizeh, Great pyramid	14 on 11	40 × 20·610
Gizeh, Second " . .	4 on 3	80 × 17·656, $\frac{6}{7}$ of 20·599
Gizeh, Third " . .	5 on 4	25 × 20·77
Dahshur, South " . .	10 on 7	30 × 17·76, $\frac{6}{7}$ of 20·72

This discovery of the design of the two pyramids based on the short cubit, explains their dimensions, never before understood. Of the others, the ninth

pyramid has not been measured, the small pyramid of Dahshur and the Lahun pyramid are hundreds of cubits at the base, and the Hawara pyramid casing has not been found in place. Thus three pyramids have a modulus of 40, 25 and 25 cubits, while two are of 80, and 30 short cubits. The real intention of these proportions of height and base, which have been deduced from the angles, are thus amply confirmed by the unit or modulus of the proportions being in simple numbers of cubits.

FLINDERS PETRIE.

It need hardly be said to our readers that the extraordinary fallacies and misstatements about the Great Pyramid are lamentable nonsense. The prophetic theories which the writers elaborate are the substitutes for others of the past sixty years, always foretelling a few years ahead, and when disproved by events then shifted to new dates. A prophecy concerning fifty years hence would be safer but not so sensational.

F. P.

ALTAR AND BELL IN LATER EGYPTIAN RITES.

THE early Coptic object illustrated in Figs. 1 and 2 is of bronze, about two inches high and is now in the Coptic Museum at Old Cairo. It served as a stand for a small bottle which held a chrismal, the holy oil for chrism; on one side is figured a cross *patée*, while from the others project heads of animals, probably meant for lions and perhaps therefore connecting the object with St. Mark.



1

Figs. 1, 2, 3.

2

1, 2, Bronze Mosaic Altar. 3, Bell.

The latter feature is of interest, as it seems to be derived from an ancient Egyptian mode of decoration exemplified in the little bronze bell of the Saitic period, or possibly early Ptolemaic, illustrated in Fig. 3, from a private collection, height $1\frac{1}{4}$ inches. The heads on the bell are those of a ram and a dog, symbols of Ammon and Anubis, and there is little doubt that its use was of a ritual character. As the names of saints are moulded on the bells of Christian churches, replaced in Protestant countries by names of a person of the Trinity, so to this bell are affixed the sacred symbols of great gods.

While large bells seem to have been unknown to antiquity, small ones were used to announce the solemn moments of temple service, such as the offering of the sacrifice, as we may see from a Roman example of the iind century A.D., found in Spain, inscribed with the name of a temple-servant

Felix, "the younger announcer." This use may well have originated in the later times of Ancient Egypt, for the benefit of the congregation, in the newer forms of Isiac worship that then arose. In these the whole principle of public worship had completely changed from that which informed the older pharaonic rites, for it was now directed for the personal benefit of each worshipper individually; they formed a true congregation, taking part themselves in the service. Such worshippers would need guidance at the solemn moments of the rites and this would be well provided by a small bell, just as it is today in certain Christian services.¹

Another feature connecting our chrismal-stand with the later worship of Isis is its form, which is that of a Roman altar. Many miniature altars are to be seen in museums; some of exactly this shape are in Cairo, found in various parts of Egypt, while others exhibited in the British Museum (Room of Greek and Roman Life, Division "Religion"), are mostly of the solid table type; the Assyrians, too, had similar altars examples of which are shown in the British Museum (Babylonian and Assyrian Gallery, Room IV, wall-case 27). These objects are sometimes designated "fire-altars," a term which should be restricted to the Zoroastrian altars of the ancient Persians; they were in fact used for burning incense at domestic shrines and had, in Latin, the name *thuribula*. Several examples, mostly small rectangular blocks, have been found in Palestine, some are shown in the British Museum, Babylonian and Assyrian Gallery, Room II, centre-case (see also *Gerar*, pp. 18-19, pls. xl-xli). One of them follows the Roman tradition in the carved snake, representative of the ancestral *genius*, climbing up the altar to partake of the sacrifice; on another, the battlemented decoration of the top edges forms pointed horns at the corners, as on the chrismal-stand. Similar horns are found also on altars used in the later cult of Isis, as may be seen in the painted terracotta figurine from Egypt illustrated in Fig. 4, from a private collection. This is of the Roman period, height 6½ inches; the man, with shaven head and white



Fig. 4.
Priest of Isis with Altar.

¹ We may also note the inheritance from ancient Egypt of the use of holy water and incense and the robing and decorating of holy images; even some of the ritual formulae seem to have been passed on, such as the "Ite, missa est" dismissing from the Mass, corresponding to the concluding phrase of the Isiac service held at the beginning of spring for the happy opening of the navigating season—Isis being, like other elemental goddesses, the protectress of sailors;—the priest here dismissed the congregation with the words, spoken in Greek: "Depart, O peoples." (Apuleius, *The Golden Ass*, bk. XI.)

A further example from the same source is to be seen in the institution of god-parents, for Lucius, on his initiation into the Isiac mysteries, takes the priest who introduced him to them as his "father" (Apuleius, *op. cit.*, XI, 25).

robe worn so as to leave the upper torso bare, the *situla* for holy water hanging on his arm and, apparently, the *menat* over his shoulder, is a priest of Isis, showing all the features pictured in the well-known painted scene from Herculaneum, often illustrated, as, for example, in Moret's *Rois et Dieux d'Égypte*, pl. xvi. His hand is placed on a small altar, whose horizontal dimensions are narrow compared with its height; the casting is rough and the details of the altar are not very clear, but we can discern the presence at each upper corner of a projecting limb like the horns on the chrismal-stand. The altar is small enough to have been portable and thus it is possible that the priest was of an itinerant class like the rascally band which carried the "Syrian Goddess" round the country, as described in Books VIII and IX of *The Golden Ass*. On the other hand we know from the remains of the temple of Isis at Pompeii that, besides the great altar, there were several small ones ranged about the colonnade enclosing the great court which contained the sacred buildings; these were probably used for sacrifice by individual worshippers and corresponded in some sort to side-chapels in Christian churches; each one would have its attendant priest and it is perhaps such a one who is represented in our figurine.

To return to the bell, it is of course possible that it was worn as an amulet, for bells in ancient times were put to this use also: the clang of bronze or other metals kept evil spirits away—among others, those which cause eclipses of the moon, as can be witnessed in Egypt even today—and it seems that it was chiefly for this purpose that bells, perhaps more potent than shells or beads, were hung to the necks of domestic animals of all kinds or attached to children's bracelets. In ancient Egypt, models of bells like the one here illustrated were made of glazed frit-ware; they can only have served as amulets, like those in terra-cotta found in Greek tombs; the Babylonians, too, used bells in this way, moulding on them prophylactic figures: lastly, they have been worn in many places as a protection against the "evil eye."¹

¹ For illustrations of temples and rites referred to, see Moret, *op. cit.*, chapter V, and Georges Lafaye in Daremberg et Saglio, *Dict. des Antiquités Grecques et Romaines*, III, pp. 577 ff.: for bells see Ém. Espérandieu in the same, vol. V, pp. 341 ff. and A. J. Wheeler in Hastings' *Enc. of Religion and Ethics*, VI, pp. 313 ff.

Egyptian examples of the later periods are dealt with by Professor Petrie in *Objects of Daily Life*, Section 111 (see Pl. 1) and Section 55, where he suggests that bells may have been fixed to infants' bracelets in order to track them by the tinkle. Many specimens are described by him in *Hyksos and Israelite Cities*, Sect. 21 and on pp. 39 (graves 126 and 311), 40 (grave 660), 41 (grave 545) and 42 (grave 304).

For small portable altars see *Memphis IV and Roman Portraits*, Pl. xv.

G. D. HORNBLLOWER.



POSTSCRIPT TO "ANCESTOR-CULT IN ANCIENT EGYPT."

SINCE the above was written, Dr. Alan Gardiner has published in the *Journal of Egyptian Archaeology* (vol. XVI, pp. 19 ff.) "A new letter to the Dead" which provides striking evidence of the great lengths reached by Egyptians in their belief in the material powers of ancestral ghosts. In this anonymous petition to a dead father, dating between the viith-xith dynasties, the writer invokes his aid in matters similar to those forming the grounds of the petitions published by Gardiner and Sethe in *Egyptian Letters to the Dead*; he also adds the request that a healthy child may be born to him. Dr. Gardiner's article is followed by another by Dr. S. Schott, publishing a figurine in baked clay of a mother holding a child on her arm, both nude, dating from the Middle Kingdom, on which is inscribed the prayer: "May a birth be granted to thy daughter Seh." The author, following the interpretation of such figures generally accepted in Germany, describes this one as that of a "concubine," but, in view of the difficulty caused by the inscription, has found himself obliged to proffer a very involved explanation of how the "concubine" of a ghost could procure fertility for the ghost's daughter; it would surely be simpler and more rational to interpret the group as an example of the fertility-figures of the kind so widely spread of old over the region of the Eastern Mediterranean and still common in parts of Africa; as such, it would add enormously to the power of the lady's prayer. (See my article on this class of figures in the *Journal of Egyptian Archaeology*, vol. XV, pp. 29 ff. and specially p. 40, second par.; for Africa see Oskar Nuoffer, *Afrikanische Plastik in der Gestaltung von Mutter und Kind*, and the case of the goddess Odudua treated of by A. B. Ellis, *Yoruba-speaking peoples*, p. 43, &c.)

The belief in the power of ancestors to procure fertility has been found in other parts of Africa; Mr. E. Torday, in his illuminating article "Le fétichisme et la sorcellerie des Bantous" in *L'Anthropologie* (vol. XXXIX, 1929, pp. 431 ff.) gives many examples of the great strength of ancestor-cult among these people, a notable one being the reply of Queen Zinga, of the eighteenth century, to a missionary who asked her to whom was due the fertility of her realms—"My ancestors" (p. 432; compare also his further remarks in the *J. of the R. Anthropological Inst.*, vol. LVIII, 1928, p. 235). This answer would also be given today by the Bushongo king, of whom Mr. Torday says, in his book *On the trail of the Bushongo*, that he is called "God on earth" and that the spirit of the founder of his dynasty, Bamba, besides his power over sun, moon and rain, "makes the seeds to germinate and presides over the production of all that lives." I have myself witnessed something of the same turn of thought in modern Egypt, in spite of the severe monotheism of the Muslim religion; once as I was riding a few miles out of Tanta, I was met on the way by a dervish attached to the renowned saint-sheikh of that place, Sayid Ahmed el-Bedawi, who asked me, somewhat haughtily, for some tobacco

and, when he had pouched it, exclaimed: "Do you know by whose power you and your companion are here, and this land is green and fertile round us? it is that of the sheikh, our master, Sid Ahmed."

This theme could be illustrated at considerable length; but the examples given above will suffice to show that the ancient Egyptian beliefs were not isolated instances of strange credulity but were quite natural, in certain conditions, to the human mind; naif they were but very real and, for the Egyptians, the maintenance of funerary rites for their dead fathers must have been an act not merely of filial piety but also of material personal advantage. It is true that it was the father himself who, if he could afford it, spent huge wealth in building his tomb and endowing it, full of care for his lasting comfort in the After-life and not trusting for this to his heirs, and it is this fact, recorded in a thousand monuments, that has obscured for us the real mutuality of the bond between the dead and the living of the ancient Egyptian family—an obscurity to be dissipated, it is hoped, by the considerations submitted above.

G. D. HORNBLOWER.

THE INFLUENCE OF EGYPT ON THE ART OF GREECE.

It is commonly taught that Greek archaic art took its inspiration from Egypt, and at first sight of a group of statuary such as the archaic "Apollos" in the National Museum at Athens, it is hard to believe that such a view may not be correct. Yet M. Deonna in his classic work *Les Apollons Archaiques*, reduces the Egyptian influence to nothing but the advanced left foot,¹ while M. Perrot² is of opinion that, the *shendet* removed, no influence is obvious at all. Where views so divergent are expressed, it may not be amiss to examine the evidence once more and to consider whether the first impression of intense Egyptianising is well founded.

The literary evidence is too well-known to linger over. Telekles and Theodorus of Samos made a composite statue after the manner of the Egyptians.³ That Theodorus had Egyptian leanings is proved by Pliny's statement that the bronze statue he made of himself had a scarab in its hand,⁴ and since Polykrates, ruler of Samos and friend of Amasis, was his patron he may really have visited Egypt during Amasis' reign (570-526 B.C.). That a Rhaekos did actually visit Naukratis about this time is proved by the discovery, in the lowest stratum of the temple of Aphrodite, of a vase dedicated by him to the goddess.⁵

The nude male standing figures belonging to the earliest phase of Greek sculpture are attributed as Apollo because for the most part they were found on the sites of temples of Apollo, whether on the Greek mainland, the Cycladic islands, or the coasts of Asia Minor. Occasionally their provenance is a tomb, and in these cases they must be regarded as funerary. The distinction however may not be very great, for they represent if not the god, yet the type of youthful beauty for which he stood. Two points differentiate them at once from Egyptian work: they are not portrait-statues, and they are meant to be free-standing without regard to architectural setting. The group in the National Museum at Athens may be taken as typical. These belong to the sixth century B.C. and form a series illustrating the transition from primitive stiffness towards the freedom characteristic of Greek art in the next century.

Fig. 1 is from Orchomenos in Boeotia⁶ and from the type would seem to be one of the earliest of the series and to date from the first quarter of the sixth century.

Fig. 2 was found in the temple of Apollo at Sunium⁷ and is of approximately the same date.

¹ W. Deonna, *Les Apollons Archaiques*, Geneva, 1909, p. 27.

² Perrot, *Histoire de l'Art*, VIII, p. 712.

³ Diodorus Sic., I, 98.

⁴ Pliny, xxxiv, 83.

⁵ E. A. Gardner, *Naukratis II*, p. 41, pls. vii, 1, and xxi, 778.

⁶ Nat. Mus. Athens, no. 9. Deonna, *op. cit.*, no. 26.

⁷ Nat. Mus. Athens, no. 2720. Deonna, *op. cit.*, no. 7.

Fig. 3 is from the temple of Apollo at Delphi¹ and is in the Delphi Museum. It is the well-known Biton of Polymedes the Argive and must therefore date from early in the sixth century.

Fig. 4 is from the sanctuary of Apollo at Ptoion in Boeotia.² Its approximate date is 550 B.C.

Fig. 5 is from the sanctuary of Apollo at Melos³ and belongs to the second half of the century.

Fig. 6 is from the temple of Apollo at Ptoion. It is of the most recent type in the series and dates from the end of the sixth century.⁴

These statues show certain characters which at once suggest an Egyptian inspiration. Such are, their frontality (meaning that if an antero-posterior median section were made, both halves would be exactly alike), the rigid pose with arms extended stiffly downwards and in contact with the flanks, the square shoulders, broad in proportion to the slender body. Some writers are prepared to explain all these as merely the natural crudities of any primitive art and Egyptian only so far as Egyptian convention chose to retain them. But two features would be hard to account for thus: namely, the advanced left foot, and the hand grasping a cylindrical object reminding us of the staff held by the Egyptian figures of the deceased. Primitive art would have found as much stability in advancing the right foot, but this is rarely done. In the primitive high-relief known as Kitylos and Dermys (Fig. 7)⁵ the two figures have the adjacent feet advanced, but this is obviously only for the sake of symmetry. Writers better versed in Greek than Egyptian art are apt to attribute the muscular flaccidity of these early statues to an Egyptian source. This is unjust to Egypt. The modelling of the musculature in Egyptian statues is often ill-defined and incorrect, but it is never flaccid. Flaccidity is incompatible with the effect of strength and stability inherent in the sculpture of Egypt.

There is a series of characteristics, not less obvious, which sharply differentiate these statues from Egyptian work. They are nude, a rare thing in Egyptian figures, especially those of stone. The trunk has an exaggerated slenderness and the back often a strongly marked lumbar curve and gluteal prominence. The treatment of the hair, and the not infrequent downward and inward slope of the eyes, are not Egyptian in character. There is a tendency to freedom of pose, which in Egypt belongs only to relief sculpture: the arms take on a flexion, the increase of which is not merely commensurate with the lapse of time, for the Kouros of Delphi,⁶ which cannot date later than the second quarter of the sixth century, has a much greater flexure than that of Tenea which belongs to the second half.⁷

In many of the Apollos much more attention is paid to the abdominal musculature than we find among Egyptian artists, who never delineate more than the *linea semilunaris* bounding the *recti* laterally and the *linea alba* between

¹ Delphi Museum. Deonna, *op. cit.*, no. 66.

² Nat. Mus. Athens, no. 10. Deonna, *op. cit.*, no. 28 and p. 292.

³ Stais, *Marbres et Bronzes du Musée Nat. d'Athènes*, 1907, pp. 6, 7.

⁴ Nat. Mus. Athens, no. 1558. Deonna, no. 114. Stais, p. 10.

⁵ Nat. Mus. Athens, no. 12. Deonna, no. 30. Stais, p. 6.

⁶ Nat. Mus. Athens, no. 56.

⁷ Delphi Museum. Deonna, no. 66 and p. 61.

⁸ Munich. Deonna, no. 80.



the two muscles. We may note however that the early Greek sculptor, though he depicted the *lineae transversae*, never did so correctly: the earliest of our series (Fig. 1) has three transverse lines, and the latest (Fig. 6) has four, and all are in the wrong place.

We now turn to the group of archaic Apollos characteristic of Ionia and the eastern Mediterranean islands, Samos, Rhodes, and Cyprus. The origin of their name is the same, but they are of smaller size, mostly mere figurines. Fig. 8 is from Cyprus,¹ Fig. 9 from Rhodes,² and these are some of the oldest of the series, dating from the end of the seventh century. Fig. 10 is from Naukratis³ and probably dates from about 570 B.C. This group has a crudity far beyond that of the western statues. Figs. 9 and 10 show the unnaturally high pectoral muscles, the attenuated waist, the flabby, distended abdomen and the over long thighs. Certain Egyptian features are in evidence, as, the advanced left leg, the rigidly extended arms, and a head-dress resembling that of Egypt, a feature not found in the western group. Fig. 11, a figurine from Knidos⁴ shows such a head-dress, but a body of the western type.

The clothing of the body forms another distinction between the eastern and western groups. The races of the near East affect heavy clothing and reproduce it in their art. But as regards the male figure, Crete delights in the semi-nude, Greece and the Cyclades in the nude, and this from the very beginning. Beyond an occasional waist-band⁵ or loin-band (Figs. 1, 2), the western group entirely ignores clothing, but in the east we can trace the course of the conflict between dress and nudity, and the ultimate compromise. Early Cypriote statues are clothed (Fig. 12), and the very early Cypriote "Apollo" (Fig. 8), though exhibiting every feature of the body, is covered with a long diaphanous garment, falling in folds to his feet. At Naukratis clothed types preponderate, and even the shendet increases to inordinate length.⁶ Flute-players at Rhodes are fully clothed⁷ and wear an Egyptianised head-dress (Fig. 13). At Naukratis they may be clothed,⁸ or naked except for the Egyptian head-dress (Fig. 14).⁹ The nude Apollo in figurine form does appear at Naukratis and elsewhere in Lower Egypt but even in these there is sometimes an attempt to indicate clothing either by an incision across the chest, representing the upper limit of the garment, or by paint of which faint traces still remain.¹⁰ So far we have found little to indicate that the debt of Greek art to Egypt is either deep or lasting: in the west perhaps nothing but a pose; in the east merely some details of dress. It remains to consider whether the underlying principles of either art are related to one another. To compare the arts of different countries is never easy, and least of all when one is notorious for its conventions and the other for its freedom. Egypt had a Canon, or the rules of proportion followed in its schools of art, and the numerous squared studies remaining to

¹ Deonna, no. 140 and p. 305.

² British Museum. Deonna, no. 135 and p. 299.

³ British Museum. Deonna, no. 148.

⁴ British Museum.

⁵ See also Deonna, no. 83, from Melos.

⁶ *Naukratis* II, pl. xiv, 14.

⁷ British Museum.

⁸ *Naukratis* II, pl. xvii, 4.

⁹ Petrie, *Naukratis* I, pl. ii, 7.

¹⁰ *Naukratis* I, pl. I, 2, 9. Cf. *Cairo Cat. Greek Sculp.*, p. 1, note 1.

us make it easy to become familiar with this. For the Greek work there are no mapped-out studies; Polyclitus' writings are lost, and his canonical statue, the Doryphoros, is known only in copies; Vitruvius' scanty remarks on the canon refer to a late form and have no reference to the early Greek work. Moreover, the canonical divisions of parts can hardly have been the same in the two countries. In Egypt the division referring to the head is taken from brow to shoulders, and this is one ninth of the whole in the Old Kingdom, Middle Kingdom, and New Kingdom, and one seventh in the Late period. But the head of Polyclitus and that of Lysippus is measured from vertex to chin. The necks of Egypt and of classical Greek art tend to shortness, while those of the Apollos, especially the eastern ones, are long. A further difficulty in comparing proportions arises from the distortion of the frontal-profile position, which makes it impossible to deduce the ratios of shoulders waist and hips except from the statues themselves. M. Deonna¹ refuses to recognise the existence of any canon in these early Kouroi, or at most he limits it to a few accepted proportions, such as that the distance between the nipples is equal to the length of the foot. If there is a canon it can only be deduced from laborious measurements of many statues such as Kalkmann has made for a slightly later period.² But in this we are balked by the fact that very few of the Apollos are intact, so that measurements must be taken from restorations which are themselves deductions. The difficulties thus stated, the value of the comparisons which follow can be estimated.

In the Egyptian "canonical" squaring the upper horizontal, that is to say the eighteenth or the twenty-first according to the period, passes roughly at the frontal border of the head-dress³ but may have no definite reference to it.⁴ The next line generally corresponds to the end of the nose, but may pass through the mouth, and the third line demarcating the head coincides with the shoulders and leaves the chin indefinitely between the two lower lines. In the statues themselves, however, we may observe a tendency at all periods for the head to fall into three equal divisions,⁵ namely, vertex to eyebrow: eyebrow to end of nose: end of nose to chin, thus producing a somewhat short face. The oldest Greek canon deduced by Kalkmann⁶ is also a division into three, but the dividing points are different, namely, forehead at roots of the hair to inner angle of eye: angle of eye to mouth: mouth to chin, producing a face very long in its lower part. The faces of the Apollos are long in proportion to their width, but they have not this particular disproportion: indeed so varied are their ratios that one must conclude that these early sculptors were already judging by the eye. Uniformity may occasionally be traced in the eastern group but it conforms neither to Greek nor Egyptian canons. We find that in the figurines from Rhodes, Knidos and Naukratis (Figs. 9, 10, 11, 15), the second third of the face begins at the angle of the eye,

¹ *Op. cit.*, p. 66.

² A. Kalkmann, *Die Proportionen des Gesichts in der griechischen Kunst*, Berlin, 1893.

³ Lepsius, *Denkmäler II*, 65, Text, 1897, p. 234.

⁴ Prisse d'Avennes, II, pl. i.

⁵ Legrain, *Cairo Stats.* 42127, 42126. Also seated Amenemhat III and Mentemhet, Cairo. Louvre: seated scribe. Berlin: Hertihetep, Tetu, granite statuette (M.K.), In-m-akhut. Leipzig: head of a King. Late period statues at Munich.

⁶ *Op. cit.*, p. 21.

but it may end at the nostrils or the mouth, or between the two. The ratio of the head, measured from vertex to chin, to the whole height is uniformly about one eighth both in eastern and western groups.

Ears, as in Egypt, are too large and placed too high, but in the western group they are not prominent, and the modelling is incorrect and sometimes, as in the Sunium statue (Fig. 2) entirely conventionalised. The ears of Egyptian statues are carefully and fairly correctly modelled. Those of the eastern group of figurines and of Naukratis are intermediate both as to prominence and modelling (Figs. 13, 15).¹

Shoulders. A first inspection of the shoulders of the Kouroi gives an impression of width and squareness. Examination shows that the squareness is not constant and that the appearance of width is deceptive, resulting only from the slenderness of the body. In the canon of Polyclitus, the ratio of shoulder-width to whole height is three to ten. In the Apollos, it is never more than $2\frac{1}{2}$ to 10, and sometimes it is only $2\frac{1}{3}$. The Egyptian "canonical" ratio is about 3.3 to 10, but, turning to the statues themselves, the shoulders are proportionately narrower even in the Old Kingdom. Ranefer shows a ratio of a little over 3 to 10, but otherwise² the proportion is under 3 and may sink to 2.6.³ In the M.K. shoulders are still narrower: the statue of Senusert⁴ shows a ratio of under 3, while that of the Ka statue of Hor⁵ is about 2.5. Late statues at Munich (Fig. 16) show about the same proportion. Turning to the eastern group of Kouroi, the shoulders have an even greater width compared with the body, but the ratio as regards height is about the same, namely, $2\frac{1}{2}$ for the Rhodes statuette and $2\frac{1}{3}$ for that of Naukratis (Figs. 9, 10). In this respect, then, the Greek sculptors approximate to the later Egyptian statuary but certainly not to the canon as exhibited by the squares.

Waists. The slenderness of the waist in proportion to the width of the shoulders is obvious in the Greek figures. The points of measurement taken for these two dimensions are the narrowest diameter of the trunk wherever that may be, and the greatest width between the upper arms held in apposition to the body. The natural point to choose for measurement would be the extremity of the acromion process, but in practice it would be mere guess-work to make use of a point which both Greek and Egyptian artists either ignored or placed with the utmost inconsistency. The measurement of greatest width involves the inaccuracy due to the varying thickness of the deltoid muscle, but at least gives us a point which is not arbitrary. The ratio waist: shoulders in the canon of Polyclitus is a little under 3:10, i.e. about 67%. The Apollos are much more slender, the usual ratio being 50%, though it may reach 52 (Fig. 5), or even 55 (Fig. 6). The Naukratis Apollo shows 50% (Fig. 10), that of Rhodes only 36.6. Turning to the Egyptian statues, the similarity in ratio is greater than their more sturdy appearance would suggest. The waist of Ranefer is only 50% of his shoulders, and a series of Dyn. V statues at Cairo⁶ shows ratios varying from about 54 to 57%.

¹ See also *Naukratis I*, pl. I.

² *Cairo Stats.* Borchardt I, 23, 51, 99, 133, 205.

³ *Ibid.*, 132.

⁴ *Karnak Stats.* Legrain I, 42014.

⁵ *Cairo Stats.* Borchardt I, 259.

⁶ *Ibid.*, 23, 51, 99, 132, 133, 205.

Menkaura¹ and Sepa² have 56·60/o, Rahotep and the Louvre Scribe 60. The waists of Middle Kingdom statues may be even narrower, usually about 500/o.³ Nevertheless the correspondence with the Kouroi is rather in figures than in reality, for the narrowness of the M.K. and O.K. waist, except in a few cases such as the Ka statue of Hor, is produced rather by a sudden constriction above the ilia than by a general slenderness of body, as in the Kouroi. The same applies to the New Kingdom, although the constriction is less marked. In the Late period, though the ratio remains about the same, the abrupt concavity of the waist disappears, the outlines are much more true to nature, and the ratio is due to a general slenderness resembling that of the best of the western Apollos (cf. Fig. 16).

Umbilicus. In the canon of Polyclitus the distance from pubic arch to umbilicus is the same as the length of the face, i.e. one tenth of the whole height measured from the forehead at the border of the hair. Anatomically this is the correct position, the umbilicus lying a little above the highest level of the iliac crests. Only in the few naked Egyptian statues can the same measurement be taken, but in these the ratio is the same, and the ratio to the whole height in the clothed figures is the corresponding one. Moreover, the position of the navel in the late canonical squares shows the same proportion. Its relation to the hip-bone is nevertheless generally wrong, for, though the iliac crests are not indicated with any precision, they unmistakably extend higher than the navel—the anatomical inaccuracy being in the position of the ilia, not the umbilicus. This precision as to position, added to the fairly correct modelling, and the fact that in the typical sculpture the umbilicus is always exposed, suggests that some special importance may have been attached to it. This exposure has led to an unnatural placing of the shendet, which, whether, it slopes from back to front or not, passes round the ilia, not the waist.

It would be reasonable, then, to expect any primitive artists learning their work in Egypt to follow their models in this matter, but the umbilicus of the Apollos is always too low, both as regards actual measurement and in relation to the ilia. This applies to both groups, but is more marked in the eastern one (Figs. 8 to 11). No attempt is made at a correct modelling: a tiny excrescence, a small circle, two concentric circles, an eye-shaped marking horizontal or oblique, any of these is enough.⁴

A comparison with the precise vertical measurements of the Egyptian canon is difficult, owing to the mutilated condition of the majority of the Apollos. Taking the later canon, we may assert with tolerable certainty that the length from sole of foot to spring of shoulders is proportionately less in the Apollos, and the head-neck measurement greater. The head approximates to one eighth of the height and the face to a tenth. The face of the Takhos coffin is well under a tenth, and that of the O.K. canon slightly under that fraction. The necks of the Rhodes and Naukratis figures are still more elongated than those of the western group. In this respect also, therefore, we fail to find that Greece followed the Egyptian canon.

¹ Cairo triad.

² Louvre.

³ Cairo: Hor, Amenemhat III, Senusert III (no. 42014). Berlin: Tetu, granite statuette, bronze statuette.

⁴ Deonna, *op. cit.*, pl. v.

Turning to statues of women, we find the same rigid frontal pose, with arms closely applied to the sides of the figure if standing, and stiffly flexed over the squarely posed knees, if sitting (Fig. 17, nos. 4, 5, 6). Again the reminiscence of Egypt is irresistible, and again the resemblance becomes less clear on analysis. The pose of the overlong arms is rather primitive than Egyptian, and resembles more the terra-cotta figurines of Artemis Orthia at Sparta¹ than the finished art of Egypt. The date of the figurines at Sparta is about 740-600 B.C. The same applies to the pinched-in waist of the standing statues, while the Doric chiton, and himation of the seated one, is altogether Greek. The head-dress bears some resemblance to an Egyptian wig, but the sudden bulge under a constricting band does not occur in Egypt except in the case of royal ladies, and the few thick tresses falling forward over the shoulders belong rather to the type of the "Kore." On the other hand, the archaic Cretan bust in the Museum at Candia has hair precisely similar, and so have the ancient Dorian figurines and other terra-cottas of the temple of Artemis Orthia at Sparta.² These seated statues were found in Arcadia and are apparently funerary, since one bears the inscription *Ἀγασό*.³

The "Kore" statues form the next typological group. They belong to the same century as the Apollos and appear to be parallel in idea; symbolic, that is, of feminine perfection, but not portraits. They are of full physique and completely clothed in draperies, at the same time ample and graceful. Were it not that the left foot is advanced, we should be inclined to say that they show no Egyptian influence at all. They would seem to be later in date as well as style than the statues in Fig. 17, for one of them bears the name of Antenor, sculptor of the group of the "Tyrannicides," dealing with an episode which did not take place till 510 B.C. Some, of more primitive type, may be intermediate in date,⁴ but the type itself was certainly fully evolved in Ionia by 550 B.C. as seen on the west end of the Harpy Tomb at Xanthos in Lycia. Here we see three maidens bearing offerings to a seated figure, probably Persephone, the "Kore" herself, while the goddess and one of the maidens raise blooms to their faces, in a manner recalling the scenes of Egyptian tombs (Fig. 18).

The "Kore" herself, however, is to be found on Egyptian soil (Fig. 19). M. Ch. Picard has recently redirected attention to the "Kore of Memphis"⁵ which shows the interaction of Egyptian and Greek art in a quite exceptional way. The clothing is precisely as in the Athenian Kores, and so are the tresses falling in front of the shoulders. The arms are flexed, the left having probably held an offering and the right supported the cloak. On the other hand, the left foot is advanced, as in Egypt, the forearms have been attached by tenons, the eyes and eye-brows have been scooped out for inlay. Moreover, though the position of the tresses in front is that of the Kore, yet they have been formed in some coloured substance, of which now only the grooves remain, and not merely painted after the manner of the Greek artist. The large ears, pierced for pendants, would be proper to either country.

¹ British School at Athens, Sanctuary of Artemis Orthia at Sparta, 1929, pls. xxviii to xxxi, pp. 146, 147, and Fig. 107.

² *Ibid.*, p. 154, Fig. 109, and pl. xxxv, 2.

³ Stais, *Marbres et Bronzes*, 1907, p. 10.

⁴ Acropolis Mus. Athens, no. 679.

⁵ *Annales du Service*, 26, p. 113. Cairo, Greek Stats. 27431.

If the Greeks learned from Egypt, where was their school? At once Naukratis suggests itself, the meeting point of the arts of Assyria, Milesia, Samos, Lesbos, Rhodes, Cyprus, Cyrene, Samos.¹ But there is little evidence of its being a place of study, although the very oldest type of Apollo (Fig. 10) dating from the early sixth century is found here. Here also was found the name of Rhaekos, and here an unmistakably pure copy by a Hellenised hand (Fig. 20) of a small Egyptian statuette. Both original and copy are in the Petrie Collection at University College London.² Moreover the Kore of Memphis combines the characters of both countries with a balance which makes it difficult to say whether the artist was a Greek who had studied Egypt or an Egyptian who had studied Greece.

On the other hand, if Naukratis were a school we should expect to find much evidence of copying. But such a copy as the one mentioned is rare, perhaps unique. Mixed types are found, but they carry little evidence of the hand of the Greek learner: Cypriote and Rhodian figures as well as Greek take on an Egyptianised head-dress (Figs. 9, 12, 13, 15).³ Motives are rather contributed than learned, e.g. the playing on the double pipes from Rhodes, and the person holding a kid or the god a lion.⁴ The Good Shepherd motive is found in Greece from the earliest times of sculpture, as the Acropolis "Moschophoros" shows, but it has little place in earlier Egypt, unless perhaps in caricature.⁵ Such figures as that in Fig. 22 are given by Greece to Egypt, not by Egypt to Greece.

And now as to the Apollos, with whom this enquiry began. The figures from Naukratis and neighbourhood are all diminutive, whether of terra-cotta, alabaster, or limestone; but the Kouroi of the western group are life-size or larger, or, if under it, never so small as to deserve the name of figurine. The figurine Apollos have certain affinities with Egyptian work, namely the straight back and small buttock, the usual pose of legs and arms, and a head-dress more or less Egyptian. Unfortunately most of the Kouros figurines at Naukratis are headless, but one found at Sais shows a head-dress more Greek than Egyptian, with hair closely applied to the neck and in front forming a perfect arc over the forehead. Several heads found in the vicinity appear to belong to the same type.⁶ Writers on the classical side are prone to enumerate certain other characters of these figurines which they classify as Egyptian, such as the large round face, the narrow mouth, the straight unsmiling eyes, the flaccid limbs, the large inflated abdomen.⁷ To anyone acquainted with the portrait statuary of Egypt, with its air of stability strong enough to outweigh its undeniable muscular inaccuracy, such an enumeration only accentuates the distance between the two arts. We may then concede that the art of the figurine Apollos is a mixed one, into which enter Egyptian, Oriental, and Greek elements, but that Greece took more than it gave cannot be maintained. Still more obvious is it that the western Apollos were never derived from these eastern hybrids,

¹ *Naukratis* II, pp. 38, 49.

² See also E. A. Gardner, *Art of Greece*, 1925, pl. xi.

³ *Naukratis* II, pl. xiii, 5, xiv, 9, 10.

⁴ Berlin, reproduced in Fechheimer, *Kleinplastik*, pl. 73. *Brit. Mus. Quarterly*, vol. IV, no. 4, 1930, pl. LIX, h.

⁵ Cairo Cat. Greek Stats. 27425, 27427, 27428. Deonna, p. 290.

⁶ Deonna, p. 290.

whom they resemble in nothing but nudity and the position of arms and legs. That these figures differ in nearly all other particulars from the statuary of Egypt has been already argued. It is worth while also to notice some things which Greek art might have learned from Egypt and manifestly did not. There is the use of the frontal-profile pose in reliefs, in which the Egyptian artist avoids all appearance of awkwardness in treating the position of the limbs. Compare with this the Delphi relief (Fig. 21) in which the artist has slewed round the scapular muscles to the front in order to bring the arm into profile, or with the Nike of Achermos, whose profile legs and frontal body suggest an entire absence of anatomical continuity.

Nor is it beside the mark to note what Greece was doing at this period of alleged tutelage, but obviously with no reference to Egyptian work at all. There is the Artemis of Nikandra, dating from the second half on the seventh century. It is a standing figure costumed like the seated women in Fig. 17 and it has not even the advanced left foot. Nor has the Hera of Samos, whose date is about 550 B.C. and whose pose and drapery are already on the way to the later Greek style. About the same date is the "Moschophoros" of the Acropolis. His legs are gone and of the position of his feet we can say nothing, but his arms are freely flexed in the familiar Greek motive of the man carrying an animal on his shoulders.

The duty of the Egyptologist is done when it is shown that the essentials of Greek art did not come from Egypt. To suggest whence they came would be to intrude on the province of classical scholars. Only it may be permitted to equate with the Rhaecus-Samos legend in the east, that of Daedalus-Crete in the west. The slender waist, the waist band, the pronounced lumbar curve, the hair dressed in elaborate spirals on the brow, these belong to the Kouroi of the Cyclades and the Greek mainland, and it was on the mainland that the Cretan Daedalus founded his schools.

EDITH M. GUEST.

QUEEN MERYT-AMON.

IN the winter of 1928-9 the Expedition of the Metropolitan Museum of New York discovered the tomb of a Queen Meryt-Amon. Mr. Winlock has shown conclusively that this queen cannot be the Meryt-Amon of the reign of Aohmes I, and it is equally certain that she is not the daughter-queen of Rameses II. There remains only the daughter-queen of Tehutmes III. As very little is known of this Meryt-Amon, a fragment of inscription bearing her name may be of interest. The inscription is on the four sides of a rectangular stand of fine



white limestone. The purpose of the stand is uncertain as the object which it supported has been broken away; the section of the object is circular: it cannot have been a statuette for there are no traces of the feet of either a standing or a seated figure, and the section of a kneeling figure is almost always more or less oblong. It may have been a vase, though I cannot call to mind a circular vase on a rectangular stand belonging to this period; or possibly it was a figure of Harpocrates on a lotus. The inscription reads: "(1) Made by (2) the *hmy-k'* of queen Meryt-Amon, (3) Amenhotep, (4) Hathor, chief of Thebes." The size is (in centimetres), 9.5×8.8 ; height 2.5; diameter of circular object, 5. The piece was bought by Prof. Petrie at Qurneh, and was probably part of the tomb furniture of the queen; it is now in the collection at University College, London.

M. A. MURRAY.

REVIEWS.

Ancient Egyptian Masonry, the Building Craft. By the late SOMERS CLARKE and R. ENGELBACH. Large 8^{vo}, 242 pp., 268 figs. and plates, 1930, 63s. (Oxford University Press).

Here is a long-needed book on Egyptian building, by practical experts, architectural and engineering. The matters have not been so thoroughly studied before, and this takes its place as a standard of reference, quoting and discussing examples of the treatment of every part of a building.

The first chapter begins with a very reluctant admission of the architectural features originating in vegetative forms. It is said that the discovery of the buildings of Zeser at Saqqarah "compelled scholars to revise their views very considerably on the birth of masonry in Egypt." The difference however is not a revision but rather a filling of detail: the columns with hollow fluting and with projecting fluting were already in the architecture of the 1st dynasty (R.T. II, xxxiv, xlv), only the copying of wood in stone is new. The matwork pattern of the panelled rooms is also of the 1st dynasty (R.T. II, xli, 69; xlv, 29). The stonework of Zeser shows the obviously tentative use of small blocks, and does not encourage us to anticipate any change in our dating of stone building. The strange capitals, Figs. 5, 6, seem to have been left blocked out, and to have been for Hathor heads with cows' ears and the pendant wig each side. The ornamental use of the Hathor head is also of the 1st dynasty (palette of Narmer). It is the extent of the work, rather than any new feature, which has surprised us. In every direction the wooden origins are visible, as in the carved stone doors.

The quarrying is next described, the method of cutting the stone out of the rock, the working lines and tools. There might be added detail of the surface as left at different ages: the hammer-dressed, the stone pick-dressed, the adze work, chiselling, and the Roman claw-tooling. The vertical grooving to get out pillar blocks, and the circular cuts for columns are worth notice. The difficulty of accounting for long stroke cuts on granite is fairly stated, and the impossibility of supposing steel to have been used. The matter is left at the possibility of some unknown treatment of copper or bronze, which has disappeared in the course of time. It is justly said that the skilled handling of a hammer and pick will do things that are impossible to a novice. The pounding out of trenches for detaching a granite obelisk, has been well worked out by Mr. Engelbach. The difficulty of undercutting an obelisk seems however the worst point, and obelisks were too near the danger limit of length for wedging to have been allowable. Perhaps the horizontal pounding was done by hanging the pounders by a rope, as battering rams were used, and in this

form it would be rather less fatiguing than the vertical pounding. The wooden handles must have been about twice as long as the breadth of the obelisk, with a counter poise on the outer end. The cutting out of quartzite is described, concluding that a metal punch point was used, to bruise out the holes for wedges. On statuary the hard stones were cut out by metal saws and tube drills, the evidences of which were published in 1882 from Gizeh.

The structure of Transport-Barges is described. The Egyptian scorned difficulty when he made a barge to carry two obelisks at once, end to end. Such a barge was towed by 3 lines of 10 boats, each with 30 rowers, 900 in all. The appearance of three lines of thwarts, on the sides, leads to a suggestion that the support was not by a boat, but by a raft of boat form. Now a boat requires a submerged capacity of nearly three times the bulk of the granite, but logs of wood must be more than six times the bulk of stone to support it. Yet if the obelisks were above the thwarts, the boat must be very wide to be stable. The triple line of thwarts rather points to the support of the great weight above them, and the need of firmly uniting the sides. It might be noted that the rotating steering-oar is still in use on large boats at Lake Como. The straddle double mast is said to date from Snefru, but it was used in papyrus boats of prehistoric age (Univ. Coll.), and indeed it was necessary on papyrus boats, of which the sides were much stronger than the bottom. In later times, the stacking of the mast on two supports when rowing down the Nile is not only figured, but is modelled in detail, with the bundle of sail upon it (*Gizeh and Rifeh*, xc). The entire absence of pulleys in shipping is noted as evidence that the value of the pulley was disregarded.

Under Preparations for Building, the remaining scale drawings and plans are described. The ceremonies of the foundation are figured, but the varied contents of the foundation deposits are not named. The levelling of the Great Pyramid is supposed to have been done by flooding the whole area with water; it would require more than 600 tons of water if only half an inch deep. It would, moreover, be very difficult to make that area, with many rock fissures in it, all watertight, and such a mode would be impossible on the top of a course of very absorbent casing, which yet is levelled to a fiftieth of an inch. Perhaps a system of long reed tubes, waxed at the joints, and ending in cups, would be the most possible method. Cubit rod are named, but a note of doubt as to subsidiary measures is needless, as the fist, little span, great span, little cubit and great cubit are all named on the rods. A paper in this Number, p. 38, shows that the little cubit was the unit used for two of the pyramids. The methods of laying out a site truly square are discussed, but hardly conclusively. A right angle can always be set out by the sides proportionate to 3, 4, and 5; or else by striking equal arcs from any two points.

The pooriness of the foundations is described, small stones of friable quality underlying the colossal columns. The establishment of many courses of large blocks for foundation is due to the Ethiopian xxvth dynasty.

The next chapter deals with mortar which is mostly plaster of Paris with a little lime; in Roman times lime became usual. The horizontal joints present no difficulty, but the fineness of the vertical joints at the Great Pyramid is entirely unexplained. The average vertical joint width is only a fiftieth of an inch, so certainly the thinnest cream of plaster could not run into such a joint. The plaster was very fluid, as it has run down freely in lines, where the stones

do not touch in the middle. But if thin plaster were painted on along a joint surface, how to bring up a block of many tons' weight rapidly enough, before the absorbent stone stiffened the plaster, and how to make enough pressure to close the joint so finely, is unexplained. (See this Number, p. 35.)

The handling of blocks is discussed. Essentially the means were unlimited hauling power, the roller, and the lever. No pulley, winch or capstan can be credited. The sled of heavy timbers was usual beneath a block. The earth bank for a slope to raise big blocks was used, as well as earth filling of halls as the work progressed. The difficulty of keeping verticality is supposed to have been settled by plumb bobs in pits; but it would be more in consonance with known methods to set up the corners first, or walls outside the corners, and then stretch a string, or sight the courses truly in line, between them.

The Dressing and Laying of blocks is next studied. The strange verdict is that "the Egyptian does not seem to have acquired the idea of testing a block with a square"; yet the reverse appears on p. 100, and the square figured in this volume (264) would be useless by the side of the plummet and level, except for stone dressing. The presence of sloped joints on the face, and of skew joints across the wall, is very fully discussed. The reason for such joints obviously was to save trimming away much stone which could be saved by such accommodation. The proposed method of making such adjustment hardly seems practical with heavy blocks, as it would require much shifting in the process. It might be perhaps easier to begin by a slope cut finished on the second stone, and laid, back down on a sand bed touching the first stone, then the face and two bed joints could be trimmed and finished as it lay, in line with the first stone without a single shift. For dressing down a face, the method,—not named in this work,—was to saw along the edges about an inch inwards, and then to chisel down the face to the plane of the saw cuts. The method of handling one of the great fifteen ton casing-blocks of the pyramid, and bringing it up flush with the next, is discussed at length. Sliding on the bed is comparatively simple, but bringing it up against its fellow at the side is the main trouble. One solution is described in the article on pyramid building in this Number, p. 35.

The use of dovetails is stated not to have been for any strengthening of the wall, but it is suggested that they served to prevent shifts before the mortar hardened. The careless way in which walls were formed by two faces with rubble between, seems incredible to us when we look at the disastrous collapse of such shoddy aggregates. Sad was the fall from the ivth to the sixth dynasty.

The chapter on Pyramid construction is inconclusive on the main issues, though describing much of the visible detail. The article on the subject in this Number attempts to reach a workable solution. It is remarked here that there is no reason to believe that the Egyptians recognized that the $\sqrt{2}$ ratio was incommensurable. As, however, they actually used two different approximations, $7 : 22$ and $81 : 256$ (or 3.1428 and 3.1605), they cannot have regarded either as exact.

Pavements and column bases are next examined. In this there might be mentioned the width and shallowness of early column bases, inherited from the wide stone needed to base the wooden column, and prevent it sinking in the alluvial soil. The chapter on columns deals with structure rather than with the detail of all the types. In this connection, the superiority of the vth dynasty

in using hard granite columns enabled them to leave a clearer space than in later building. The style became hopeless when a gigantic building was entirely of weak sandstone, and the bulk of the columns filled up the view. The account of roofing follows, describing the various fallacies of construction which were smothered with plaster and paint. The different effective ways of forming a rain-proof flat roof are drawn in detail. No mention is made of the very effective provision of a sand bed, over brick tunnels, deep enough to sponge up all the rain of a storm. As rain seldom penetrates more than three or four inches, except where it runs together, the deep sand bed over the Ramesseum brickwork would effectively keep the brickwork dry.

The doors of wood and the method of hanging them are described, but without reference to the stone models of wooden doors of Zeser. Window openings and ventilators are figured of various types. The grilles of stone window slabs are but little known; they were made decorative in the xxth dynasty and onwards. Stairways were usual from the first dynasty, and as heavy weights had to travel on them there was usually a broad band of slope on either side of the stair, to permit sliding.

The history of the arch has been misunderstood owing to classical prepossession. The brick arch is at least as early as the first dynasty, and as it was used in neolithic Europe it may be as early in Egypt (see *Reallexicon der Vorgeschichte* VII, lxxix). The mode of building an arch without centring is described, but the beautiful domed brickwork of the xviith dynasty is omitted. The half-arch tile-like bricks, used for narrow passages at Qurneh, also deserve mention. The joggled voussoirs usual in Arab work are at least as old as the Ptolemies, as figured here. The facing and sculpturing are described. Among the tools for dressing limestone, the adze should be placed very early. The blocks of the iind dynasty at the Royal Tombs were dressed with a flint adze (R.T. II, 13), the rock sockets of the Great Pyramid appear to have been dressed flat by a copper adze, and the abundance of copper adzes in the first dynasty, without a single chisel, mark what was the favourite tool. The mode of drawing by squaring the surface is illustrated, but without reference to the canons of different ages. The list of colouring materials from Mr. Lucas does not go beyond what Mr. Spurrell and Dr. Russell published forty years ago (*Medum*, 28, 44, 50); the imitative painting is excellently shown in Lepsius' copy (L.D. II, 19-22) and Mrs. Quibell's copy of the tomb of Ra-hesy. The older workers should have the credit.

Lastly there comes the earliest material, brickwork. The 80-foot wall at Tanis is not due to Ramessu II, but to Pasebkhanu of the decadent xxist dynasty. The mode of brickmaking is illustrated. The statement that small bricks were used for houses, and large ones for government works, in "ancient times" is not borne out by examples. In the Royal tombs, bricks increased from 8.9 to 10.5 during the 1st and iind dynasties. In the vith, public bricks are usually 12 to 15 inches, in the xviiiith 15 to 24 inches (*Abydos* II, 51). After that, they fluctuate, and finally decline to 7 inches in Arab times. The variation is much more by age than by purpose. The use of the wavy wall, to allow of fluctuations of level without cracking, is not noticed. The movement of the ground owing to the rise and fall of the Nile is a serious difficulty.

An outline of the methods of Egyptian mathematics is given, but the strange way of only using fractions with numerator 1 should be explained as

naturally arising from division of food among workmen, which is also the commonest concrete problem. Appendices deal with the actual tools that remain to us, a map of localities, and an outline of the impossible short chronology. Now that both the old views are dead we may hope to see the reasonable statements of the Egyptians once more trusted.

This work is an indispensable outline of the actual evidences on construction, and the notes made above are only given in the hope that so detailed a work may in future be further completed.

Mathematics before the Greeks. By Prof. R. C. ARCHIBALD. 4^{to}, 12 pp. (Address to Amer. Assoc. Advance. Science, 1929).

This summary view begins with Babylonia, which is so fully documented by cuneiform tablets. The Sumerian arithmetic used 60 as a basis, and not 10, and had a positional notation, so that 16.40 represented 1000, i.e. $16 \times 60 + 40$. Tables of squares and cubes, square roots and cube roots, were in use. The custom of interest on loans at various rates (usually 20 to 30%, or later 5 to 20%) needed much reckoning in accounts. The geometry rose probably to $a^2 + 2ab = b^2 = (ab)^2$; they also had a correct formula for finding the length of a chord, from the circumference of the circle and the perpendicular of the chord. For areas they assumed that $\pi = 3$, hence the area of a circle was reckoned as $\frac{1}{12}$ of the circumference². Other problems seem to show that they had arrived at solution of quadratic equations by feeling the way in various cases. The Egyptian practice is outlined, with its curious building up of fractions, each with numerator 1. High denominators were sought by trial and error. Essentially the whole method has been built up by the custom of dividing food among a party. The more complex questions of unequal shares are all dealt with on practical lines, due to providing men in proportion to their families or wages. In geometry the measurement of volumes was based on a square of 8 being equal to a circle of 9 diameter, or $\pi = 16^2/9^2 = 3.160$. On the setting out of slopes by vertical and horizontal measure there has been much confusion, owing to copyists mixing theory with observation, and Prof. Archibald is thus led to regarding such proportions as absurd. In a note in this number the actual facts are set out. The working by relative proportion was familiar in practice, though not reduced to an ultimate theory. The greatest triumphs in geometry were producing the correct formula for a frustrum of a pyramid, and finding the area of a hemisphere. A method of extraordinary accuracy for finding the side of a heptagon, by ruler and compass alone, was also reached.

When we consider the cumbrous notation used, and the clumsy processes of the geometry, it is astonishing that any such results could be reached in either Babylonia or Egypt. Even two hundred years ago, Newton was struggling with notation in a way that no beginner uses now.

Bibliography of Egyptian Mathematics. By R. C. ARCHIBALD. Large 8^{vo}, 106 pp., 1927 (Mathematical Association of America, Oberlin, Ohio).

This list with appendix is the latter part of the 1st volume of a translation of the Rhind papyrus. The works on the subject are arranged in the order of publication from 1809 to 1930. Where there is any fresh interest in a work, a brief outline of the new ideas is added, and these notes are of much value independently, as memoranda on the gradual understanding of the subject.

It is such a useful summary for reference that a few omissions should be noted, for the next appendix. In the chronological list of documents, the Hierakonpolis mace is placed as an example of notation, so the sample account keeping of the 1st dynasty from a scribe's tomb may be named (*Gizeh and Rifeh*, iii A) and the earliest piece of actual accounting of quantities in the late 3rd dynasty (*Meydum*, xiv). The simple geometrical relations of the dimensions of chambers in the Great Pyramid show a close planning of diagonals to produce a result, and more than one example of the π ratio. Gillain's excellent book of 1927 deserves some detailed statement (see p. 69), and the origin of the system of fractions in food division might be noted (*Ancient Egypt* 1928, 124).

Aegyptiaca, a catalogue of Egyptian objects in the Aegean area. By J. D. S. PENDLEBURY. 4^{to}, 121 pp., 5 pls. (Cambridge Press) 1930. 15s.

This is a sound catalogue in detail of some three hundred objects of Egyptian origin found in the Aegean area. The limitations of that area are reckoned to include Crete and the south Peloponnesos, but to exclude Rhodes, which is nearer, and one of the most important centres of Egyptian connections. Beside the main catalogue, there is also a hand list of Aegean objects found on sites in Egypt, for which we may be also very thankful. The polished black amphora and cups of the 1st dynasty found at Abydos might also be included (*Abydos* II, 38); also the plates of Amarna sherds of all kinds (*Tell el Amarna* xxvi-xxx). The plates here are useful, and it would be well if more could be supplied.

The publishers have unfortunately made the book so spacious as to be almost absurd.

The Accuracy of the Old Testament. By J. GARROW DUNCAN. 8^{vo}, 192 pp., 32 pls., 1930 (S.P.C.K.). 6s.

This outline deals with the many instances where the results of modern excavation come in contact with ancient records. The history of Abraham, the conquest of Palestine, Jerusalem, the Canaanite religion, and some other matters are dealt with, pointing out how the physical details that have been found fall into place with the narratives. Such a summary of the recent discoveries in relation to the well-known historical books is much needed by the general public and, until further advances are made, this volume may well hold the ground. A few details may be suggested in addition. The early use of writing among the Hebrews is indicated by their having *shatar* "managers" (literally "scribes") of themselves, under the Egyptian task masters. This implies that the usual registering and account keeping, which the Egyptian always required, was done by Hebrews. The place Mizar or "a little one" to which Lot went, would mean equally well "a step" or short distance, and the naming of Ophel as Mizar would mean "the step hill" referring to the long flight of steps to the Kedron. The shekel of silver of Abraham would probably be 160 or 180 grains, as those were the most usual Syrian units, rather than 105 grains. In the earlier chapters a broad distinction should be made between the Hittites of European origin, who were great stone builders in Cappadocia, and the Hyksos of Central Asian origin who always fortified with earth banks, having lived in great plains. Though the two races were both in Syria, the Hyksos were before the Hittites, and the abilities of the races were very different.

JOURNALS.

Metropolitan Museum of Art, New York.

Egyptian Expedition 1928-9. This bulletin opens with a summary of the previous two years' work, the clearing of the old quarry pit in which the adherents of Tehutmes III had cast the fragments of Hatshepsut's statues at Deir el Bahri; there they had been buried under a million cubic feet of earth from the work of the Egypt Exploration Society. M. Naville never thought what a treasure of sculpture he was burying in the ground which he had not searched. The fragments were not only in the quarry, but many have been found carried away as waste stone nearly half a mile distant. Many pieces that lay visible had been removed during the last century to museums, and the chase now is to reconstitute the new fragments with those already known. Two heads in Berlin, and a torso at Leyden, can be made up as complete figures, and are to be set up at these museums. One of the two colossal Osiride figures of the queen has been built up and set in its old place; even with the top of the crown lost, it is twenty-six feet high. The work of sorting hundreds of fragments and tracing their connection is more congenial to a museum curator than it would be to any one seeking for history.

Beside the quarry pit, there was another place where dumps had been deposited, on the slopes of fragments at the foot of the cliffs north of the temple. This region was therefore attacked in three stages, one above the other, and the ground gradually cleared. After six weeks of work, a hole in the rock appeared. This led to a passage which passed close beneath the portico of the temple, in fact baring the foundations. Further on was a deep pit across the passage, and beyond it the coffin and mummy of a royal daughter, sister, and wife Merytamen, daughter of Tehutmes III. The great outer coffin about 11 feet high was of the type of those early in the dynasty, such as Aahmes Nefertari, covered with glass inlay of network pattern. Inside that was a natural-sized coffin. The whole had been plundered, and the body stripped: but the mummy was decently re-wrapped, covered with wreaths, and replaced in the two coffins, by the care of Masaharti the high priest in the xxist dynasty. A few years later, the tomb had been reopened to place the burial of a daughter of Panezem, which was found in the passage before reaching the trap well. A small object naming this Meryt-amen, now in University College, is published by Miss Murray in the present number.

The graphic work of the year is reported by Mr. Davies. The end of the copying of the tomb of Rekhmara has been reached, so we may hope to see a definitive edition of perhaps the most important tomb at Thebes. The report describes in detail the remains of tomb 120 of Oanen, the brother of queen Tiy. Much of it had been wrecked in the Atenist fanaticism, but part of the figures

of Tiy and Amenhetep III remain, with a frieze of kneeling captives beneath their platform. The figure of the Kefti is certainly not a Cretan, but clearly a Syro-Hittite, which accords with Mr. Wainwright's careful analysis of all the evidence (see *Ancient Egypt* 1914, 172). This showed clearly that Kefti was not Crete, by systematic evidence that has been ignored in Germany and by those who follow the fashion. The figure here with North Syrian dress and Hittite boots would accord well to the Kefti being in the eastern part of Cilicia, as Mr. Wainwright concluded. The Cretan objects brought by the Keftiu only show that they acted as middle men in the trade. Mr. Davies resorts to the usual transfer of blame to the Egyptian artist for confusing different peoples; the confusion lies in the modern bias. There is no ground for "crediting the Egyptians with surpassing ignorance of their far empire." The boot is on the other foot, read modern for Egyptian.

The drawings of granaries, and figures of the King in the harvest thanksgiving, are carefully discussed. A pair of granaries, with a ramp of ascent for filling them, is said to have been "recently found at El 'Amarneh"; but such a pair with a ramp 85 feet long was already published in 1894 (Petrie, *Amarna*, xli). By the bye, why is the name Amarna now decorated with a prefixed ' and a final h? It is merely a modern concoction from Amarieli and the Beni Amran in the neighbourhood; if we are to be precise, then one of the genuine names must be applied to the ruins, to which it does not really belong. Pedantry is bad enough, but pseudo-pedantry!

xxv. No. 1. 1930. *Exhibition of wall paintings*. This notice contains some illustrations of the most delicate examples.

NOTES AND NEWS.

THE half-century celebration of Flinders Petrie's researches is continuously observed in a series of events, and in formal congratulations from many societies.

June 3. Lady Newnes' "Egypt" matinée, attended by 1400 spectators was described in our last issue. The xviiiith century leather casket, presented there to Sir Flinders by Captain Spencer-Churchill, contained a congratulatory address, signed by Prof. B. Ashmole, Mr. H. Balfour, Dr. S. Cockerell, Sir James Frazer, Prof. E. A. Gardner, Mr. S. R. K. Glanville, Prof. F. Ll. Griffith, Dr. H. R. Hall, Mr. G. D. Hornblower, Prof. Sir Arthur Keith, Col. T. E. Lawrence, Prof. J. L. Myres, Prof. Karl Pearson, Prof. Sir W. Ramsay, Rev. Prof. A. H. Sayce, Sir Herbert Thompson, Dr. Mortimer Wheeler, and Mr. C. L. Woolley.

June 19. The half-centenary banquet given at the Savoy by Dr. Robert Mond was a brilliant gathering and marked by much genial warmth of feeling, on the part of the 180 colleagues and students who attended it. The two speeches were short, and when the company left the tables adorned with lotus (white water-lilies), they mingled in the reception room. Twenty-five of the excavators trained in Sir Flinders' camp were able to be present:

"In addition to Sir Flinders and Lady Petrie the guests included: F. M. Viscount Allenby and Viscountess Allenby, Lord and Lady Melchett, Prince and Princess Wiasemsky, the Bishop of Gloucester, Sir Henry Birchenough, Lady Burghclere, Sir Charles Close, Lady Evans, Sir James and Lady Fraser, Sir Richard Gregory, Sir Charles and Lady Marston, Sir Frank and Lady Newnes, Sir Denison and Lady Ross, Sir Herbert Samuel, Sir Andrew Taylor, Sir Robert and Lady Witt, Mr. H. G. Wells; Mr. Howard Carter, Dean Inge, Prof. Stephen Langdon, the Hon. Henry and Mrs. Mond, Prof. F. L. Griffith, Rev. C. B. Mortlock, Prof. Peet, Dr. Seligman, Mr. and Mrs. Leonard Woolley, the Principal of King's College, M. Jean Capart, Mr. and Mrs. N. de G. Davies, Mr. Philip de Laszlo, Prof. and Miss Donnan."

July 9-31. The antiquities of the Neolithic, Hyksos, and Philistine ages recently discovered at Beth-pelet, Palestine, were on view at University College, Gower Street.

A half-centenary fund is in course of collection, so that our coming excavations at Gerar and Tell Ajjûl shall receive sufficient support. Contributions are invited.

H. P.

The Sinai expedition of the Hebrew University has collected Manna, and made an exhaustive study of the subject. They find that it is the sweet excretion of two kinds of scale insect (Coccidae), which suck the juice of the tamarisk. It is akin to the sweet excretion of the aphidae which is the food of ants. It consists of cane sugar, glucose, fructose, and saccharose, but no trace of proteins, so it seems an unexceptionable food.

The Italian expedition under Prof. Farina and Prof. Marro has been searching the desert near Gebeleyn. They found a late predynastic cemetery with two hundred graves, from which they conclude that the people differed in their ethnological character from those of the historic period. A full report of this work will be awaited with interest.

A long-standing puzzle was said to be cleared up, about the animal of the F sign. It has usually been called a serpent, but representations of it on a plant stem look like a slug. Now Professor Cockerell of Colorado University writes to *Nature* (May 17, p. 745) claiming it as a slug, *Veronicella nilotica*, which has been found by the Nile above Khartum, and on an islet in the Bahr al Gebel. The living animal is dark grey above, and dirty yellow below.

Mr. Robson the zoologist responded to this in *Nature* (June 14) and wrote that the head appendages were like those of the viper and not like tentacles of *Veronicella*. Miss Murray publishes in *Nature* (June 28) the photograph of the earliest example, which is prehistoric Egyptian; this proves that it is a snake and not a slug.







THE BUNDLE OF LIFE.












IN his *Folklore of the Old Testament* Sir James Frazer has called attention to the words which Abigail addressed to David when trying to avert his wrath: "Though a man is risen to pursue thee and to seek thy soul, yet the soul of my lord shall be bound in the bundle of life with the Lord thy God; and the souls of thine enemies, them shall he sling out as out of the middle [from the bight] of a sling."

Frazer attempts to explain the phrase, and shows that its ultimate origin is the belief in the External Soul, which can be placed for safety in some concrete object. "There may be circumstances in which, if the life or soul remains in the man, it stands a greater chance of sustaining injury than if it were stowed away in some safe and secret place. Accordingly, in such circumstances, primitive man takes his soul out of his body and deposits it for security in some snug spot... If he should discover some place of absolute security, he may be content to leave his soul there permanently." (*Golden Bough*, p. 668, abridged edition.) Though Frazer has proved beyond question the belief in the existence of the External Soul, his evidence as to a "bundle of life" is taken from the meagre instances of modern times, and is, in itself, unconvincing. I hope, however, to prove the exactness of his theory by the evidence found in Ancient Egypt. The evidence comes from the early periods of Egyptian history, when all matters of religious custom and belief centred round the great nobles and the person of the Pharaoh.

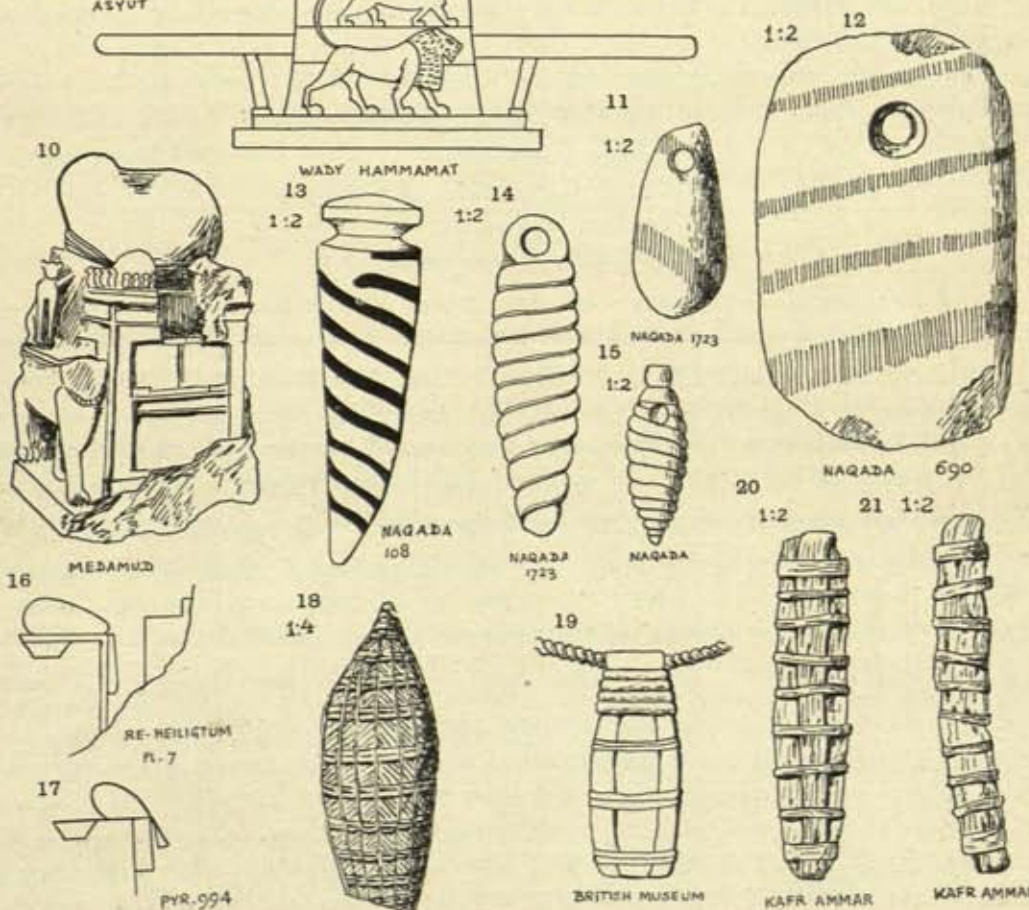
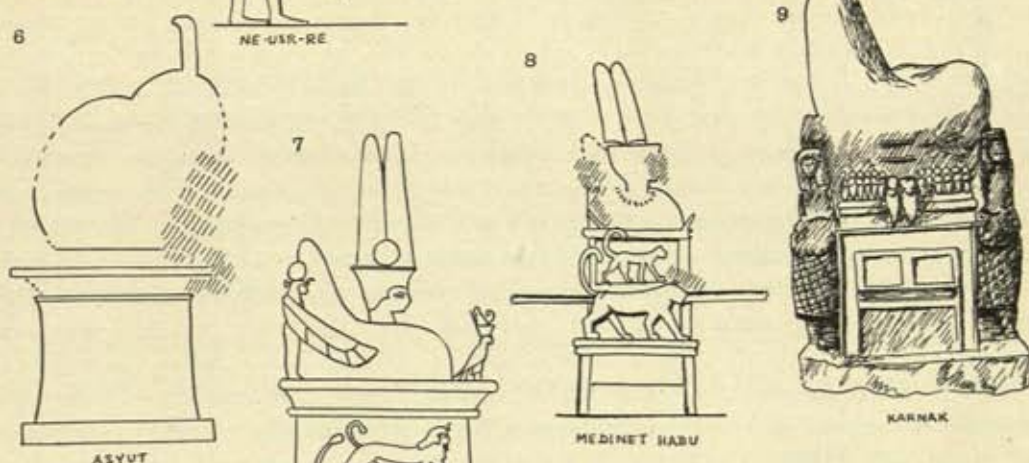
The date of Abigail is late in Egyptian history, as she was contemporary with the xxist dynasty. In all periods there was continual intercourse between Egypt and Syria, each country affecting the other in religion and custom. This must have been more particularly the case after the Hyksos became masters of Egypt, as the two countries were united under the later Hyksos kings. After the expulsion of the Hyksos the Pharaohs of the New Kingdom held southern Syria as part of their great foreign empire, which was finally lost to them under the later Ramessides of the xxth dynasty. Abigail's part of the country was thus under Egyptian influence for centuries; that influence must have remained long after the Egyptian power declined; so that beliefs, and the phrases founded on those beliefs, would be alike in both countries.

Frazer's lucid account of the External Soul furnishes the clue to the Bundle of Life. As the well-being of the whole country depended on the Pharaoh his life was singularly precious, and every means would be taken to preserve it from accident and illness. The safest place for his life (or soul) would be to confide it to the care of some great personage whose own life depended on that of the King. Well wrapped up in folds of cloth to prevent rough contacts and placed in the charge of someone whose own life must end at the King's death, the royal soul would be completely safe. An object so wrapped and so guarded might well be known as the Bundle of Life.

Frazer has also called attention to the importance of the placenta or umbilical cord, in primitive minds. Even at the present day the fate of the placenta is often supposed to have an effect on the fate of the owner; "If it be impaired or lost, he will suffer accordingly." In short, it seems that among certain peoples either the placenta or the cord was the seat of the External Soul. Some years ago (*Man* xi, pp. 165-171) Professor Seligman and I pointed out that the standard  carried before the Pharaoh represented the royal placenta, and that it was a personal possession of the King himself and not an ensign of troops. I think I am correct also in saying that in the early periods it does not occur in scenes of fighting. The name of the standard is  , "the *h* [placenta] of the king." In the earliest examples it is carried by a beardless youth (Fig. 1); later the bearer may be a priest (Figs. 2, 3), or the sign  represented as partially anthropomorphic (Figs. 3, 4). Very rarely is it carried by , and I do not know, so far, of any instance of  being the bearer.

Another name for the object carried as a standard is    "Praised One" which occurs in the Pyramid Texts. "The districts of Horus, the districts of Seth, the Sekhet Aaru, they praise thee in this thy name of  Praised One" (Pyr. 480. W.M.N.). "The districts of Horus, the districts of Seth, the Sekhet Aaru, they praise this Pepy, like  the Praised One, like Yabs chief of the Southern Land, like Dedun chief of Nubia, like Sopd beneath his *kšb-t* trees" (Pyr. 994. P.N.). "Come to him the     Praised One in rejoicing and the gods in brotherliness, come to him the Horizon-dwellers upon their faces" (Pyr. 1155. P.N.). Blackman (*J.E.A.* iii, 245), following von Bissing, thinks that the sign in the Pyramid Texts, although represented on the emblem of divinity, is not the same object as the standard but is the picture of a bag, presumably the bag containing the articles for the ceremonial toilet of the Pharaoh. Apart from the fact that a bag could never be in itself a sacred object, nor sufficiently holy to be called "The Praised One" (for its sanctity could only be derived from its contents), the Egyptian method of representation would result in the display of those contents on the standard as if uncovered. In the Ra-temple of Ne-user-Re is a fragmentary list of cult-objects with their names and the names of the priests or officials in attendance on the "fetishes." Sufficient remains of the name of the official to show that the object on the standard is not a bag; it is oval in shape and lies horizontally on the cross-bar of the standard. A streamer depends from the end of the cross-bar; this, in the Pyramid Texts is represented as attached to the oval, thus forming the mouth of the "bag" (Figs. 16, 17). It seems therefore not unlikely that "the Praised One" and the   are the same object.

In our paper in *Man*, Prof. Seligman and I quoted from a letter from Roscoe concerning the beliefs and customs of the Baganda regarding the placenta and umbilical cord. In his book on the Baganda Roscoe gives the same information, but as that information is scattered throughout the pages I prefer to quote from the letter as being more consecutive. Roscoe states that the place of the placenta, as an object of reverence, has been taken in modern times by the umbilical cord. "On the birth of a prince the umbilical cord is






dried and preserved, placed in a pot which is made for its reception, and sealed up; the pot is wrapped in bark-cloths and decorated with beads... this is called the *mulongo* (twin), and a house is built for its abode in the enclosure belonging to the Kimbugwe, the second officer in the country, who takes his seat in all the councils of state with the Katikiro (Prime Minister). The umbilical cord of the king was decorated and treated as a person. Each new moon, in the evening, it was carried in state, wrapped in bark-cloths, to the king; and the Kimbugwe, on his return, smeared the decorated cord with butter, and left it in the moonlight. It was looked after by the Kimbugwe until after the King's death, when it was placed in a special shrine or temple called *malalo* with the King's jawbone, *lwanga*, which is spoken of as the "King." The two ghosts, the one of the placenta attached to the *mulongo* and the other of the dead King attached to the *lwanga*, were thus brought together to form a perfect god, to whom offerings were made in the *malalo*. The *malalo* or temple is entirely different from the tomb in which the King's body is laid; indeed, the *malalo* is built some months after the tomb, often, it appears, at a considerable distance from the latter. The *malalo* is kept in repair by the state, while the interior and enclosure are looked after by some of the widows of the deceased King. Within the *malalo* is a *daïs*, covered with lion and leopard skins and protected by a row of brass and iron spears, shields and knives; behind this is a chamber formed by bark-cloth curtains; here are kept the *lwanga* and *mulongo* to which the spirit of the dead King is attached, but they are placed upon the *daïs* when the departed King wishes to hold his court, or for consultation on special occasions."

There are several points in this description which appear to throw light on Egyptian ritual and custom of the early historic period:





- (1) Double burial-place.
- (2) Rank of guardian of *mulongo*.
- (3) Tenders of *malalo*.
- (4) Wrapping of *mulongo*.

(1) The double sanctuary—the one where the physical part of the dead King was buried, the other where his divine spirit resided—suggests very strongly the two sepulchres of Neter-khet, the two pyramids of Snefru and of Menkaura, and the double "burial-places" of other Kings.




(2) The *malalo* or spirit residence was tended by the widows of the King, i.e. by ladies of high rank. In ancient Egypt the relatives of the Pharaoh and a certain number of courtiers held the office of , which Sethe has shown to mean "Belonging to the *h* of the King," or "Guardian of the royal placenta." The title was purely honorary in so many cases that the official, who was actually in charge of the sacred object, qualifies his title by the addition of the word  = "True, real, actual." I take these  to be the guardians of the *malalo*, who formed the court of the deceased King.


(3) The Baganda place the umbilical cord in a pot before wrapping; but, as I have pointed out before, the Egyptian artist of the early periods preferred to represent the actual object rather than the container. Therefore it is the placenta itself which appears on the standard of Narmer; the form became more conventionalised later, possibly because the artist's eye was accustomed

to see only the wrappings and not the actual placenta. It is this object encased in wrappings that I take to be the Bundle of Life; but I shall refer to this further on. The method of the Baganda was to wrap the object in bark-cloth, but as the Egyptians were weavers, even in the prehistoric period, the bandages were in all probability woven.






















(4) The connection of the placenta with the life of the owner and the necessity for its preservation have been proved by Frazer and others. In Egypt as in Uganda it was not only wrapped but consigned to the care of a high official. In Uganda the official was next in importance to the Prime Minister; in ancient Egypt he was often the Prime Minister himself, at least in the Old Kingdom. He also held the position of Chief Magician    , or to use the modern phrase, the Chief Witch-Doctor.









Another parallel between Uganda and ancient Egypt in this connection is that when the African potentate went in state to meet the gods, his umbilical cord had to be present. In Egypt in all religious ceremonies when the Pharaoh went in procession, the placenta-standard was always carried before him. This custom is shown from the time of the Scorpion-King until the Ptolemies.




















































If it is accepted that the  is the Bundle of Life, the final words of Abigail explain the rare title  , which occurs only in the Old Kingdom. Abigail cursed the enemies of David by saying that their souls should be slung out of the Bundle of Life "as from the bight of a sling." In other words, sudden and unexpected death should come upon them as, in fairy stories, it comes upon the wicked magician or ogre when the hero finds the cunningly hidden soul of his enemy and destroys it. The bandages, which bound the precious object, would naturally suggest a sling, and the sling was a weapon commonly used for killing at a distance. Abigail's words therefore mean that David's enemies would be killed by the Bundle of Life being opened and the souls removed from it.






The group  reads *wn*, and is the verb "To open"; it is a participle, and can be translated as "He who opens" or "The Opener." To read the title as "Opener of the royal placenta" would mean nothing unless it had some definite connection with the King; and seeing how closely the placenta was connected with the safety of the owner's life, I suggest that the title has to do with the death of the Pharaoh.

There are known at present only ten holders of the title; of whom one belongs to the ivth dynasty, four to the vth, and five to the vith. In the accompanying table the names are, as far as possible, in chronological order, so that the date at which new titles are introduced can be seen at once. It will be noticed that the earliest holder of the office has comparatively few titles, whereas the offices of the later nobles are so many and varied that I have included here only those which were held by not less than four persons.

Four of these titles occur only with ; these are     (unless the     of the Vezir Zazamonkh may be considered a variant),    ,    , and    . All ten officials have

two titles in common,   and  . Of these the first is so common as to be probably honorary except in a few cases; but the second was an office of great importance, especially when qualified with the addition  "of his father." This addition appears to occur only with the actual descendants of the King. In the case of the four descendants of the King as given in the table, two were not only actual, but also eldest, sons of the Pharaoh; while Tetamery was son of the King's only daughter, *Watet-khet-Hor* "Only one of the body of Horus," and possibly therefore stood in a very special relation to the throne. The fourth prince, Ra-em-ka, though eldest as well as actual son of the King and bearing the title of  , does not have the additional phrase  attached to his title; it is possible that he died before the previous holder of the office, for his tomb is unfinished, and his predecessor Ra-sekhem-ka

NAMES AND REFERENCES.																				
    LD. II 15a	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
   LD. II 42	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
   MAR. MAST. 178b	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
   MAR. MAST. 209	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
   WELL. VEL. 8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
   D. d. GER. II p. 8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
   ... I p. 3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
   MAR. MERA. p. 58	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
   " " p. 561	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
   D. d. GER. I p. 13	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

must have lived to an advanced age for he was born under Menkaura and apparently died under Sahura. Ptah-shepses and Mereru-ka were sons-in-law of the Pharaohs under whom they lived; though not royal themselves, they were closely connected with the royal house. The Deir el Gebrawi princes were probably of royal blood, for two ladies of the family became queens, bearing their names in a cartouche like other reigning sovereigns. Thus Ptah-uash is the only one of the ten who cannot be proved to be related to the royal family by blood, his genealogy and connections by marriage being unknown. He was, however,    "Foster-child of the King," which shows that he was of high rank by birth. The name is a rare one; the only other occurrence is of a son of Ra-en-kau (*A.Z.* 1899, p. 75), which may be a record of the great official in his childhood. Bissing takes this Ra-en-kau to be of the vth dynasty, but there is nothing to show from what tomb the slab came; it may, therefore, be part of the tomb of the prince Ra-en-kau, son of Khafra. If this is so, the connection of Ptah-uash with the royal family would be clear. Another connection may perhaps be found through his second name  , which is as rare as the name Ptah-uash, being known besides only at Deir el Gebrawi.

The princely family of Gebrawi produced, as shown above, two queens; in this way also Ptah-uash may have had some royal connection. If Ptah-uash's connection, either by blood or marriage, with the Pharaoh can be proved, the evidence would point to the fact that only relatives of the royal house could hold the office of "Opener of the Royal Placenta."

I now come to my explanation of the title. Abigail's words show that David was secure because his soul was bound in the Bundle of Life, while the curse which was to fall on his enemies was that their souls should be thrown out and that they would therefore die. In order to cast out the souls the Bundle would have to be opened. It is possible that in the late period in which Abigail lived, the Bundle of Life may have belonged to the whole tribe, the individual souls being wrapped together; but in the early periods of Egyptian history, there is no doubt that the source of all life and fertility was the King alone, and that as long as he remained "alive, prosperous, and healthy," so also did his subjects.


To every Divine King there came a time when his strength began to fail, and this was the signal for the ritual murder. Details of the actual killing vary in different places, but two are constant; one is that the Royal God was warned of his approaching doom, the other is that there was an appointed executioner to consummate the sacrifice. This executioner was often a man of the highest rank, and in ancient Egypt was, I think, "the Opener of the King's Placenta." In any explanation of the custom of King-killing, it must be borne in mind that in primitive times the executioner would most probably be the next successor to the throne. This would account for the fact that in the Old Kingdom the "Opener" was nearly related to the King by blood or marriage.

The custom of killing the King had probably changed before the beginning of the Old Kingdom to the sacrifice of a vicarious victim, but the ceremony of opening the Bundle of Life might very well take place at the death of the substitute, and the King's own life would then be renewed by binding it again in the Bundle after the sacrifice. The vith dynasty still remembered the custom of putting the King to death, as the Texts of Pepy and Meren-Ra (Pyr. 1453-4) show; and it is also evident that the custom belonged to that primitive stratum of the religion of which the god Seth was the deity, an earlier stratum than the Osiris cult.


Though the title became extinct at the end of the Old Kingdom, the belief in the importance of the royal placenta continued. Instances of this belief have not yet been recognised in the Middle Kingdom, but the sacred object appears in and after the New Kingdom, not merely as the standard carried before the Pharaoh (this form continues without intermission until the Ptolemies), but as an actual object of worship.

Again Abigail's words give the clue, "The soul of my lord shall be bound in the bundle of life *by the Lord thy God*." Here it is evident that the god himself was to form the bundle as well as the man's soul.

The object in question occurs in temple wall-sculpture, steles, engraved bronze plaques, and as small limestone models. The representations are always rare, and are not known as yet before the New Kingdom; the greater number belong to the Persian, Ptolemaic, and Roman periods. The object is amorphous, like a soft cushion pushed up on one side; it is set on a highly decorated throne, and is called the god Amon (Figs. 6-10). Mr. Wainwright has collected several

examples in his article on the Aniconic Amon (*Ann. du Serv.* xxviii, p. 175). In the New Kingdom the object has in outline a strong resemblance to  of the early periods; in the later examples the shape becomes more stylised, and its identification with the divinity is then determined by the head of the god protruding from the middle of the object. The elaborate ornamentation of this holy object consisted of representations of protective amulets and deities carved on the surface; the carving was merely an artistic convention for beadwork or pattern-weaving, like the cartouches cut on the belts and shoulders of royal statues. Actual examples of woven cartouches are those of Thothmes III and Amenhotep II (Carter and Newberry, *Tomb of Thothmes IV*, pls. i, xxviii). It may therefore be considered that the representations show some object wrapped in cloth.

Both Daressy (*Ann. du Serv.* ix, 69) and Wainwright call attention to the passage in Quintus Curtius, which describes Amon of the Oasis; the most peculiarly holy of all the Amons, to whom Alexander the Great went for his initiation as a son of the god: "The thing which is worshipped as a god has not the shape that artificers usually applied to the gods; its appearance is most like an umbilicus, and it is made of smaragdus and gems cemented together." The umbilicus or omphalos was a well-known object of worship in the Aegean, where its wrappings of wool were represented by carvings on the stone. Its shape was rounded and amorphous, suggesting that it was neither the umbilicus itself nor the umbilical cord but actually the placenta. In modern times the divine placenta was worshipped among the Baganda, who carefully differentiated it from the umbilical cord. Roscoe (*The Baganda*, pp. 299, 305) says that when the King went to meet the gods his umbilical cord had to be present, while the god himself was a huge conical-shaped object draped in bark-cloth, and with it was his umbilical cord. Another example of a divinity dwelling in a bundle is found in Seligman's account of the Shilluk, whose god, Nyakang, dwelt in a sacred bundle when not inhabiting the body of the King.

Another point as regards the placenta is brought out by Blackman (*J.E.A.* 1916, 235 seq.) in the name of the god  Khonsu, which is written and was probably pronounced exactly like the words meaning "the King's placenta." He argues that the god Khonsu was therefore the deified form of that sacred object, but he does not explain the connection of Khonsu with the moon. I therefore suggest that, as the King in his divine aspect is himself the sun, born of the Sky-goddess, so the moon is the sun's placenta, equally born of the Sky-goddess, but pale and dead compared with its vigorous "twin." A gibbous moon would, to the eye of faith, recall the shape of the object which I consider to be the Bundle of Life. If Khonsu were indeed the personified deified placenta, the bandaged form of the god is explained; as the actual placenta was bound up in cloths so the personified placenta was bound. Blackman also notes that the attributes held by Khonsu are the attributes of royalty, showing his close connection with the King.

I have tried to show that the Bundle of Life in which "the Lord thy God" was bound belonged to the King and to the people in general, but it must also be remembered that each individual could possess an External Soul which, like that of the King, was housed in the placenta or umbilical cord; this, as is still done in parts of Africa, was preserved and wrapped up in cloth. Here,

then, is the explanation of the little bundle-amulets, wrapped in cloth or papyrus, which are found in the New Kingdom (Figs. 20, 21), and which are represented in the Old Kingdom. If the amulet of the Lady Ynt (Fig. 19, see also *Anc. Egypt* 1917, p. 49) is compared with Fig. 20 it will be seen that the triple form with a flat band down the middle is the same in both. I suggest that the pendants of banded stone also represent the Bundle, the banding of the stone (Figs. 11, 12) being recognisably like the narrow bands round the bound amulets. The objects of ivory (Figs. 13-15, 18) also represent something wrapped and bound up. The umbilical cord, if it contained the soul of the owner, would be excessively precious to him and would hardly be worn at all times for fear of loss and consequent disaster, it would be kept in a safe place and only brought out on great occasions. But an object in which the bandaging had become stylised and was merely an imitation of the actual object could be worn at any time.

The Bundle of Life was therefore not a *façon de parler* on the part of Abigail but a living belief, and one which must have had great influence on her own thoughts and those of the man to whom she spoke.

M. A. MURRAY.

AN ADVENTURE IN THE CROCODILE CAVES OF MAABDEH.

It happened in the days of my youth; and youth is not apt to count the cost, when adventure offers itself. My brother was stationed, in 1878, near Manfalut on the Nile, fifteen miles north of Assiut. I wanted to get a taste of oriental life, and went over from England to see him. One evening while we were chatting about the country he told me of some little known caves lying on an ancient, but now deserted, caravan route between the Nile and the Red Sea. The weirdness of his descriptions roused my interest; and when he proceeded to mention that, not long before this, a French scientist with his attendants who had gone there on an expedition of exploration had never again been seen or heard of, my appetite was whetted by the spice of danger. Although my brother warned me not to venture there on any account, I made up my mind there and then to choose those caves for my first adventure. I secured the help of a charming Syrian gentleman, and an Albanian, and we managed to gather together a suitable party consisting in all of some twenty souls. Unfortunately the Syrian was the only one of the party except myself who could speak a word of English; and as for me, I knew no Arabic. We made our start at midnight, and expected to reach the site of the caves by early morning. Our route was little more than a bare track across the desert, nearly obliterated since its disuse as a great caravanning road. We kept going, however, all night over rock and sand until we made our way into the rough terrain of the mountains where our objective lay. By morning we arrived at the place where a deep declivity showed that the ancient road had fallen in, to a depth of about twelve feet below the ordinary level. Here, I was told, the entrance to the caves was to be found. So we dismounted, and equipped ourselves with waterbags and candles. The Syrian thought discretion the better part of valour, and refused to join us. Indeed he was not very keen on my running into unnecessary dangers either. The result of his defection was that I was left alone to the tender mercies of a lot of natives with whom communication was quite impossible except by signs. At the outset I was rather staggered when I saw that the so-called entrance was nothing more than a very low subterranean passage, eighteen inches or two feet in height, and as dark as pitch. As I thought it wise to assume a courageous attitude whether I felt it or not, I resolved to be pioneer, and so, lying down on my stomach, I started to crawl in towards the promised cave. I knew not how far the passage led, what evil things might beset my way, or what lay beyond. The position was not very reassuring. For trailing after me were about twenty natives who would be apt to block my way out, should there happen to be no way in. But after about fifteen feet of crawling through the tunnel, I reached the cave. With the faint light of our candles we could see that the place was immense, but how large we could not tell. So we wandered off to explore. It was

a limestone cave, rich in stalactites and stalagmites; and its ramifications appeared to have no end. The whole place was literally flooded with mummies. There were tens of thousands of them. They were packed like sardines on the ground; they were stowed away in every available crevice; they extended along all the ramifications of the cave. They were everywhere. One of my objects in coming here was to gather, if possible, some of the mummies of the sacred crocodile to carry home with me as a trophy of my expedition. With the help of native boys I found, after some digging, a delightful bundle of these tiny crocodiles, companions of the dead Egyptians, all swathed as mummies, and each one something of the shape of a cigar, and about 18 ins. long. Now that I had escaped all perils and secured the object of my adventure, I decided that it was time to get back into the fresh air again. The whole atmosphere was heavy with the pungent smell of mummy cloth, and the heat was melting, at 80° Fahr. When we started off, however, we soon discovered that we had lost every trace of our entrance and all sense of direction. The caves were huge and ran in every direction; there was no sign in the darkness which would furnish a clue to our maze. As soon as the natives saw they were lost, they ran about shouting and gesticulating like madmen. I could not speak a word to them, and could only assume a calm I did not feel. I sat down quietly on my strange carpet of mummies and by signs called all the company to my side. Then I made them set down their waterbags and spare candles by me, and told them off each one in a different direction to search for our missing tunnel. At last I heard a shout of triumph from one of the boys who chanced upon the entrance passage. When we came out I found my Syrian friend who had spent an unhappy time, imagining us lost. The moment he saw me, he embraced me enthusiastically, and offered thanksgivings to Allah for our preservation.

Our entrance was no real entrance at all. It was merely an accidental break, directly under the caravan road, which had fallen in and opened to view a crevice of one of the caves below. The real entrance is unknown to anyone. Although I lived in Egypt afterwards for forty years and spoke of my adventure to many, both native and European, no one had ever heard of the existence of this burial ground.

FRED T. PEAKE.

[This account of the entrance differs from that in Baedeker's Guide, where it is stated that the approach is made by getting oneself lowered twelve feet down a shaft by a rope, and not by crawling through an open passage. There seems to be more than one broken entrance to these natural caves. It would be desirable to plan them completely, accompanied by a single helper, to avoid stirring the dust, and to use electric torches to save the risk of smothering in a conflagration. Ed.]

LIVING WITH THE NATIVE.

WHEN folks lose the common constraint of society and public opinion, they are sadly apt to slip away from their standard of life. The tourist abroad, especially among a darker people whom he thinks to be inferior, becomes a very repugnant creature in many cases. He may not find the consequences during his short passage, however much the native may despise him, but the matter is really serious when a white man has to live continually in contact with other races. Living with them should be just the opposite of "going native": in the first case you keep your own standard, in the other case you descend to their standard of life.

The essential condition is to be quite familiar, and without constraint on either side, with a genial good will, but yet never yielding the least to any influence. Never let any native find that the slightest benefit comes from pressure; it was the unjust judge that gave way to pestering. Let it be always known that the least recommendation is fatal to any man's benefit. However familiarly I have treated a man, I have never known one venture to plead for another. Sometimes I may ask a trusted man's opinion in a matter where native feeling was unknown; he valued the trust, and would respond frankly.

The native bully—like that species at home—gives himself great airs. It is needful, then, to undo the common idea of contempt for any one; no one is contemptible, except for their faults. By not assuming any of the barren externals of dignity—or riding the high ass—so usual with a native or a greenhorn, you always keep an unapproachable control, and get a kind of uncanny reputation as having a power which is outside their scope. Power without parade confounds their code of management. If a man does wrong out of your sight, never seem to notice it, but wait until his folly can be brought up before his fellows and be laughed at by them. No one thus knows how much he can venture to trespass, or what is in store for him if he goes wrong. In looking after workmen, the quiet eye is the means of rule. On first coming in sight of a field of work, stand still for some minutes and gauge what everyone is doing. If a man seems idle, look for the cause; commonly it is due to carrier boys being slack. But you should find the cause before saying anything. Often it can be put right, as by changing a route of discharge of earth, with the tone of a favour and help to the worker, who nevertheless finds that there is no excuse left for slackness. In no case should one ever shout out general incitements; such only show incompetence, and the reaction of sloth after a spasmodic rush of work undoes more than the incitement. To be seen to stand quietly assessing each person's work, together with a very occasional discharge for slackness, keeps up the tone more effectually than anything else. Be *servus servorum* if you can help anyone, but yet *magister magistrorum* in determination and direction.

The men come up for doctoring, and all the difficulties of life, from wanting a needle and thread, to needing to state an injustice before ruling powers. They will bank wages, or thrust money into your hand for safety uncounted, certain of its security. The goodwill of the girls and women, who shyly begin to join in work, is an important asset. They cannot earn otherwise, and so they will be your agents to keep everyone quiet and avoid friction. They should be treated courteously, and some men were much amused by my speaking to an old negress by the polite term "Oh my sister," the phrase which is a guarantee of propriety. Learn about the families and connections of all the people, and never be above helping anyone, as in heaving up a woman's load of sticks by the road side.

The results of holding this kind of contact and control, is that a gang once gathered and trained are ready to go anywhere as wanted. I needed to work twenty miles away in the desert, where only saltish water could be had; but any number would come, girls and all, and live under the bushes in blazing hot weather. Or if wanted in Sinai, men would march 80 miles, cross the Red Sea, and march on up to the work. Never have they hung back when they knew what was wanted.

The same tone is a great help in difficulties. Sometimes in a discussion with a group of men, who are cantankerous and *mush radi*, "not willing," I have watched the faces until I saw one rather bored, and made a joke to him about the business, and this soon melted all the obstruction; even an infantile comparison will suffice. When a nomad Bedawy greeted me by grabbing my windpipe—a favourite form of assault—I laughed and tickled him under the chin, which solved his brutality at once. When a sheykh came and blustered, as I was camping, and began ordering my men about; I drew him on one side, and in the gentlest tone said that I was going to camp there, and nothing that he said could prevent me; he collapsed at once and walked off. In far more serious matters the same way prevails; a Swedish lady missionary captured by Chinese pirates, asserted that they could not enter her cabin or touch her things—and they desisted. An English prisoner put under the guard of a German in the country soon had his guardian in hand to act as his servant. The greatest example is Caesar and the pirates. When he was captured he laughed at their only asking twenty talents and said he was worth fifty. Till that sum was raised he lived with them for six weeks, joined in their diversions, ordered them to be quiet, and called them dunces and barbarians. He told them he would crucify them if he caught them. They were delighted with his facetiousness, and when ransomed, he soon raised some ships. Then he reached them when they were carousing, and seized them prisoners with all his ransom. Luckily one has not to do with pirates, but a touch of the spirit of a good-humoured control serves best of all in the common affairs of life among strange people.

THE UNDER-DOG IN THE PALESTINE CONQUEST.

THE Nemesis of every violent conquest, in contrast to gradual settlement, is that the conquered are not assimilated with the victors. Even to this day in England we have traces of the Celtic, Saxon, and Norman ideals in sections of our people. From this it follows that an invasion, where numbers and equipment are fairly equal, will be assisted by an oppressed group which is able to avenge its wrongs by uniting with the invaders. Of this we have examples in the so-called Norman invaders, who were largely Bretons of the families expelled by the Saxons; before that the party of Vortigern offered land to the Saxons; earlier the British Red Dragon Segontiaci had rallied to Caesar when he struck at the White Dragon Belgic British. In other lands there were the Catholics of Spain who aided the Muslimin against the half Arian Goths. In Palestine the same process is seen at work anciently. The evidence of a similar aboriginal group, which was repressed, is seen in the Calebite dog figures from Beth-pelet. They show that there was an expelled border people, kept down in the arid south land by the Bronze users of the fertile country, but who were still ready after many centuries to merge on fraternal terms with the invaders of the Judah clan. They had common aims in attacking South Palestine, in order to push northward into the fertile region, and to subdue the Amorite and Hittite occupiers who were the rulers centred at Jerusalem, under the Egyptian hegemony.

There seem to be traces of the Calebite clan later, when Goliath said to David, "am I a dog," or when Abner protested that he was not "a dog's head," *ras Celeb*, or chief of Calebites. There may have been a trace of the original home of the Calebites in the fertile land, where the Dog River, *Nahr el Kelb*, runs down; where also the Syro-Phoenician woman compared her family to the *zavzavim*, or little dogs, that fed under the table of the dominant Jews.

The military point of view of an invasion, which seldom strikes an archaeologist, appeals to an old Territorial when considering the needed supply of scouts for the paths and water-supply, in the attack on the Amorite occupation by Joshua's southern campaign; the dog people of Beth-pelet would be "instead of eyes," as Moses said of Hobab.

Manuden Vicarage.

M. J. STEWART
Capt. late 4th D.C.L.I.

REVIEWS.

Les Survivances de l'Égypte antique dans le Folklore Égyptien Moderne. By MOHAMMED GHALLAB. 8^{vo}, 290 pp., 40 frs., 1929 (Geuthner).

This essay is a welcome token of Egyptians' study in their own past. It is on the lines of modern work, and deals with the present folk-lore with native knowledge. The broad divisions are (1) the popular literature ancient and modern; (2) the general psychology of men and women; (3) Society and its ranks; (4) the supernatural in religion and magic. It is a weighing of the ancient against the modern world, a task in the spirit of Plutarch, who would no doubt have liked to compare Akhenaten and Hakim, or Amenhetep III and Mamun. It is truly remarked that few lands have developed a popular literature which has so long continued into modern tales. From the hieratic papyri, the 1001 Nights, and the lips of the peasantry, there are the same ideas in the same setting. Curiously, in naming the romance of the golden breast plate, no comparison is made with the parallel conditions of the Mameluke chiefs.

Social details which are more obvious to a native are better stated than elsewhere, such as the long extent of festivities. Wedding festivities in the country may continue for six months in rich families; even on a small scale they continue for several days. The feasting of Ramadan is faithfully described: how the day should be spent in fasting and prayer, leading to a night of pious tranquillity; how this theory is thrust aside, and all people sit down to long meals, with laughter, music and songs, lasting till dawn. Never are they happier than in the long nights of Ramadan when they throw off the gravity of the day, drawing down the maledictions of the devout, and Ramadan is particularly dear by the gaiety which it brings.

"Notwithstanding the changed conditions of social life, the women in the popular tales keep an uncontested supremacy in the family, a real power over men, a keen and delicate tone which they always wield: this agrees to the reality, in spite of the efforts of man to render this influence less apparent under the dictation of Islam." "The women of Old Egypt are truly the ancestors of the heroines of the 1001 Nights." In the official world of all ages, redress "cannot get any positive result, because it is attacking an all powerful administration which resists by the sheer force of the inertia and corruption which pervades it." Admirable!

In the accounts of popular beliefs, there is much of value owing to native intimacy. The sacred trees are described: a withered old acacia which was so venerated that the author could not get any one to cut it down for firing in

a very cold winter. A *naqb* or *zizyphus* died of old age, and the village in alarm built a shrine of its wood on the place, to honour "Lady Naqb," *es Sitt Naqb*, which was venerated as the tree had been. The sycomore in which the beneficent tree goddess dwelt is still thought to be haunted, and an intelligent Arab, in passing it at night, shuddered and told me that he saw an *afrit*. Children who are ailing are taken to the shrine of a saint half an hour before Friday prayers, for invoking the power to expel the demon who troubles the infant. Possession by a demon is inevitable if one goes to sleep between four o'clock and sunset: the reason is plain, the body is more liable to chill when asleep, and that is the cooling time of day. A woman of the author's village suspecting a neighbour of having the evil eye, dressed up a stone to carry in place of her infant, and after seeing the dreaded eye the stone was found to have turned black. The horoscope is still in honour in Egypt, where pretended astrologers flourish. The old festival of Amen and procession of the sacred bark is kept up at Thebes, and the people say that at a fixed hour once a year a glittering dahabiyeh appears on the lake; if any one keeps silence when he sees it, he can help himself to its golden treasures. Thus did Mariette, being very adroit, and carried off the treasure now in the Cairo Museum.

We may hope, now interest is aroused, that the future work of Dr. Ghallab will be to collect more of first-hand material, apart from the works of others which he so freely quotes.

Histoire des Grands Prêtres d'Amon de Karnak. By G. LEFEBVRE. 8^{vo}, 303 pp., 5 pls., 150 frs., 1929 (Geuthner).

Inscriptions des Grands Prêtres Romé-Roij et Amenhotep. By G. LEFEBVRE. 8^{vo}, 77 pp., 2 pls., 70 frs., 1929 (Geuthner).

The period in question is down to the end of the xxth dynasty, a natural break before the dynasty of priest-kings and the complications of the Ethiopian age. The first chapter deals with the sacerdotal functions of the priesthood including the "feminine clergy." Owing to the vast endowments of gifts to Amen in the xviiiith dynasty, offices multiplied amazingly.

The maintenance of the estates of land and slaves given to Amen required a bureaucracy, 126 grades of which are here listed in hieroglyph and translation. Profuse as this list is, we miss the "Scribe of the intendant of all vase drilling of Amen" (B.M. shabti), "Scribe of the manager of the house of ten (council) of Amen" (B.M. cone), "Scribe of Amen in the Place of Truth" (Turin 186, 1589-90), "Scribe of the embankments (*thma*) of Amen" (Lieb. Dict., 1194), "fan bearer on the bark of Amen" (Louvre C. 53, Turin 20), "manager of the engravers of the temple of Amen" (B.M. Osiris) and innumerable other titles. The complete Directory would be as large as that of Papal officials. Chapter 3 shows that this body was growing from the xith dynasty onwards.

In chapters 4 to 10 are given the biographies of the high priests in succession. Lastly there is a complete list of the priests, with the references for their monuments, date, family and titles.

The second volume supplies the complete hieroglyphic texts and translations of all the remains of two of the greatest Ramesside priests.

The Pliocene and Pleistocene Deposits of Wadi Qena and of the Nile valley between Luxor and Assiut. By K. S. SANDFORD. 8^{vo}, 56 pp., 6 pls. (Quart. Jour. Geol. Soc., vol. lxxxv). 1929.

Paleolithic Man and the Nile-Fayum Divide. By K. S. SANDFORD and W. J. ARKELL. 4^{to}, 77 pp., 11 pls., map. 1929 (University of Chicago). 22s. 6d.

These publications are the result of three years' minute study of the recent geology of Egypt, a labour which was greatly needed and has been long over due. It had lately become the more necessary owing to fresh discoveries of prehistoric man both in Egypt and Palestine, and the general lay-out of the whole subject of the connected geology and climates is essential as a basis. Readers of *ANCIENT EGYPT* will be already familiar with the principal facts, for in this journal in 1915 (pp. 126-135) the prominent changes were noted which anyone could see in a passing visit. The Nile valley had been started by a fault into which rainfall had run, and the amount and duration of that had sufficed to cut a valley through the limestone to about a thousand feet deep, and ten miles wide, fed by side valleys similarly scoured out. The collapsed caverns point to the valley extending to some 300 feet beneath the present plains, though this evidence seems unnoticed in the present works.

In this pluvial age the land sank (or sea rose), inundating all the valley, which became an estuary. The valley was filled up, at least in its tributaries, to 650 feet above the present sea level, by the earth and rocks washed down into the estuary; this filled the valleys up to water level, much as the creeks round England have been filled up by wash since the sinking four thousand years ago. The next stage was the uplift of the land again, so that the rainfall ploughed out most of the filling which had accumulated, and ran off to some way below present level. Since then the Nile bed has risen considerably by accumulation of mud, owing to the cessation of rain.

We can now see better how the new studies fill up this obvious framework of the Nile history. The Eocene limestones are stated to have been cut through during the Miocene age, forming the present valley. Then the submergence and blocking of the valley by débris is dated to the Pliocene. The later cutting out of this by rainfall is Plio-Pleistocene, and the gouging out of the Fayum basin began with the Pleistocene, the rainfall pouring through the Hawara gorge into the Nile valley. The drainage of the rainfall both in the Nile and in the Fayum made a great river which cut its way down, leaving terraces of beach at intervals; these have been traced in both the valley and the Fayum, and serve to show the continuity of levels between the two.

When the Nile bed sank to the terrace 100 ft. above the present river, Chellean man left his work there. As the river cut downward, there was left at the 50 ft. level the Acheulean age, at 30 ft. the Early Mousterian, and at 10-15 feet the Mousterian; of the last a large surface group was published in *Lahun II*, pls. xxxvii-ix; it is now stated to extend into the Fayum. The old gravel bed of the Nile is mapped along the western desert behind Meydum.

The prominent bed of torrential gravels which cap the high ridge between the Nile and the Fayum is dated to Plio-Pleistocene; this formation is notable for the great size of the blocks and the shells of *ostraca* immensely thickened to resist rough conditions. Its position proves it to be older than the beginning

of the hollowing out of the Fayum basin, which is thus relegated to the Pleistocene. The Hawara gorge is considered to extend down to the bottom level of drainage of the Fayum basin (p. 35), and to have provided, later, a great lake in the Fayum filled by Nile (p. 38).

The study made by Mr. Sandford in 1925-6, for the British School of Archaeology in Egypt, is now fully published in the paper to the Geological Society; in this the level of the river terraces of different ages was fixed and the general surface geology of the southern region. The age of the bones of hippopotami and man, which was the objective of that expedition, was not solved by examples *in situ*. But that they were far from recent is proved by their mineralized condition, and the presence of extinct Cape Buffalo, extinct Hartebeest, and extinct crocodile types. The "geological point of view... within broad limits I will define as Upper Palaeolithic," that is pre-Tardenoisian. There is a slip in note 2 on p. 539, ascribing to archaeologists the view that the Nile bed has risen a foot per century. The rise found historically is only 4 to 5 inches in that time.

There is still much to be done to fix the relation of man to all the changes observed, but now that the general position is laid down it will be possible to know what to seek, and where to seek, for the evidence of human history which we require.

Bases, Méthodes et Résultats de la Chronologie Égyptienne. By RAYMOND WEILL. 8^{vo}, 63 pp. 1928 (Geuthner).

This deals with the Sothiac year being assumed as the only calendar, ignoring the seasonal year. The long reckoning of this method being impossible, the short reckoning is accepted in spite of the history. All this is needless in view of the seasonal calendar. The intervals between reigns as marked on the early Annals are discussed. In the ivth and vth dynasties there is stated to be no interval; but on the photograph by Schäfer the readings show an interval of 60 days at the accession of Shepseskaf, and 22 days at the accession of Neferarkara. At an unknown king of the 1st dynasty the interval was 45 days. These seem to be obviously the periods of official mourning, and it is useless to propose changes of the calendar to account for the intervals. The theory of the Sothiac year was not due to Meyer in 1904, but was well known long before.

A long discussion follows on the observations of the actual rising of Sirius at present made in Egypt, and worked out by Borchardt and Neugebauer. But none of the parties seem to notice a change which would far outweigh all the small amounts described. In 3000 B.C. Sirius was over 9° further south, and further from the sun, and therefore more readily seen in the glow of sunrise.

The recognition of different length of year, 365 and $365\frac{1}{4}$ days, by the Greeks is described. Eudoxos of Knidos stated the fixed year in the ivth cent. B.C. and it was officially set up as the true calendar in 238 B.C. It must have been one of the four calendars named in the xiith dynasty, which are ignored by M. Weill. There does not seem to be any material advance in this subject in the present volume, and the resettlement of the question by the seasonal year will clear away the chronological difficulties.

Beth Shemesh. By ELIHU GRANT. 8^{vo}, 222 pp., 35 pls. photographic, 24 pls. drawn pottery. 1929 (Haverford Archaeological Expedition, Haverford POB 223, Pennsylvania).

This is an account for the general public interest, but yet containing much important illustration. As the tombs were all numbered, and the pottery kept in groups accordingly, the material can be used for dating. The text is in the form of a daily recital of events, so that it is not easy to refer to the details of the objects. Three groups of connected rock-tombs were cleared, of the xvth, xvith, and middle xviiiith dynasties. Only 26 scarabs were found, of which but one bore a name, "the elder of the *hayt* hall, Snoo-ab" of the xiiiith dynasty (= xv). The second group of tombs certainly covered a long period, as there were ledge handles of early Copper Age, with xvith dynasty pottery, xviiiith, and some even later. The first group is early and middle xviiiith dynasty. The third group is consistently early Hyksos, xvth dynasty. Much care was spent in recording plans and details of graves, and it is to be hoped that such results will be fully published. A record without publication is an incipient crime. Small plans (about 1:200) are given of three town levels,—bronze, early iron and late iron; but these are too much reduced to leave the lettering legible. The full series of pottery forms is excellent, though it could be much simplified by a reference corpus.

The Field Museum and Oxford University Expedition to Kish. 1923-9. By HENRY FIELD. 8^{vo}, 32 pp., xiv pls. 1929 (Field Museum, Chicago).

This is a brief outline of the successive seasons of work at this site, about 20 miles east of Babylon. The latest building was the temple of Nabonidus; a library was also of late period, and the tablets were unbaked and in bad condition. The ziggurat of Tell el Uhaimir was cleared. The most important matter was a deep clearance of an area 100 × 50 yards. About three feet down was a stratum of red earth from 3 to 5 feet thick, which is found in all parts of the city, and is dated by a cylinder which Prof. Langdon puts to 3200 B.C. It is mainly composed of a confused mass of bricks, supposed to have been washed down over the site when inundated. Below the red earth are graves with stone bowls, copper, and coarse flint work. At 43 feet deep a large tomb contained only plain pottery. A chariot had wooden wheels with copper nails, a copper bull on the rein-ring, skeletons of asses which drew it, and human skeletons all around. This seems closely parallel to the Ur graves. Going down lower, the original native soil was found at 8 feet below water level. In that 8 feet there were three building levels. Two levels of great floods are placed to 3400 and 4000 B.C. The map is strangely unlike Mackay's good plan in his Report.

A very early site, 18 miles away, Jemdet Nasr, was worked. The pottery was painted with animals and cross lines, like Susa 2. There were tablets of the earliest kind, like proto-Elamite, impressed by a pointed stylus, apparently in Sumerian; also seals, cylinders, copper and stone tools. The local wages are much the same as in the Palestine desert. The most deadly matter is the division of proceeds between Baghdad and the West; "Each group of objects is divided, object... by object chosen alternately." Thus no tomb-groups are kept complete, and the foundation of archaeology is sapped. In Palestine the government take whole groups, and resign whole groups, and the evidence is fully preserved.

A Sumerian Palace and the A cemetery at Kish, part ii. By ERNEST MACKAY. 4^{to}, 215 pp., 42 pls., map. 1929 (Field Museum, Chicago).

This volume is the full expansion of one section of the work outlined in the above pamphlet. It opens with an excellent map of all the mounds in detail. In the plates, however, the editor has neglected the matter of scale, and the author has not stated measurements in the text, so the size is vague.

The main work here was the complete clearance of a palace of the early kings of Kish, about 3500 B.C. Graves of the age of Ur-Nina 3150 B.C., and later, were made in the ruins. The palace consisted of a court fifty feet square and twenty chambers around it. This had annexed eight store rooms, an inferior building of twenty-four chambers and a hall 90 × 25 feet: also a later annex was added most of which has been denuded away. The scale of this establishment will give a clue to the spaciousness and luxury of the early civilisation. The main palace had not only its own walling with a single entrance, but an outer thick wall, separated by a corridor all round. Thus if the first line of defence were broken, the attackers would be in a narrow space, seven feet wide, in which they could be crushed from above. Each chamber of the palace is described. The unburnt bricks were 9 × 6 × 1.2 to 2.2 ins., and rather smaller 8 × 5.3 × 1.6 to 2.5. The latter size was also burnt, as 7.8 × 5.3 × 1.2 to 2.4: a large size of burnt brick was 10.6 × 6.7 × 2.0 to 2.4. Thus all the bricks were of the small size of the Egyptian in the 1st dynasty. The bricks were laid in mud mortar, but bitumen was used to cover the brick floors. Beneath the foundations, a brick pavement was laid over the whole site as a working ground.

Of contacts with western remains there are a few to note. A fine pear-shaped mace head is of the form of the late prehistoric Egyptian and Old Kingdom. A few weights and pebbles were found together in a chamber; the formed weights are of 1311 grains agreeing with 10 of the higher type of daric or Babylonian shekel, and of 1105 which can only be 6 of 184.2 the koirine of Syria: others more like pebbles are of 65, half a daric; 290 and 568, 2 of 145.0 and 4 of 142.0 the usual Egyptian qedet. Another stated to have seven lines cut on it seems very doubtful, as that number is never used as a multiple, perhaps a line or two more may be illegible. The allotment of two Egyptian, two Babylonian, and 1 Syrian standard is strangely mixed in so small a number. The toy chariots of 3000 B.C. are of a type (with raised front) differing from that of the box-form in 900 B.C. at Gerar. The decoration of the pottery is like that usual in Egypt in the xith-xiith dynasties, see *Ancient Egypt* 1926, p. 102.

The use of a case of thorn extractors,—pick point, knife, and tweezers,—seems to have been very widely spread. Many cases were found in the Sumerian graves, and at Bismiya, others occur at Mohenjo-Daro on the Indus, similar ones are now used in the Punjab; some at Hallstatt, and La Tene in the Iron age, and Bohemia, Bavaria and South Germany, and they are frequent in Roman Egypt. The range of place and time is very wide. The purely Mesopotamian objects are of much interest, but beyond our scope here. The plates are sufficient, but the editor has omitted the statement of scale which is essential, while the absence of index makes it tedious to hunt over all the text to find the descriptions

of the plates: the contents list is insufficient for this search, as for instance the chariot models of two plates are not listed in the contents. The main plan of the palace would have been better placed square to the paper and not divided in two plates, as there is no virtue in the magnetic north which is continually changing.

The New Nuctemeron (The Twelve Hours of Apollonius of Tyana). Script received by MARJORIE LIVINGSTON. 8^{vo}, 143 pp. 1930 (Rider). 4s. 6d.

This is claimed to have been produced under the direct inspiration of Apollonius of Tyana. Poor Apollonius has evidently fallen into bad company in the underworld. Of old, "his conversation turned chiefly on the topics most useful to mankind, namely fortitude, wisdom, temperance, and in short all the virtues," as his biographer records. Now-a-days he wanders in the Cosmic Universe and discerns the aura of spirit forms. These auras are rings of vibration, or motion, inter-planetary, inter-stellar, and inter-solar. Curiously, he has picked up sentences of Christianity, and brought his physics as far as about ten years ago, but is scarcely up to date in the latest speculations. The familiar phrases of recent theosophy, and "etheric waves, oxygen, and other aerial matter" come in, but hydrogen and nitrogen never get a chance. Moreover, "the cosmopolitan mind of earth-people as a whole affects the status of the planet on which they live and, in consequence, its influence as a heavenly body in the Universe. The influence of some stars and planets upon others is known to be definitely evil." The modern interpreter should remember that "of the immortality of the soul, Apollonius taught that the doctrine is true but that all too curious investigations concerning things so important is to be avoided." So we doubt if Apollonius would care to be interpreted as he is in this volume.

JOURNALS.

Annales du Service des Antiquités XXIX.

DRIOTON, ET.—*Temple "de Taharqa," Karnak.* This is to be rebuilt, and on fallen blocks is the name of Psamtek II.

GUNN, B.—*Middle Kingdom stele from Edfu.* This is in a barbarous style, for Haonkhef, his wife Hormena, sons Horembedet, Ptahur, Beb,* and daughters Nefert, Satasa, Hormena. He states that he left his family to go to the south of Kush in 13 days (very quick travelling); he brought back gold and 26 girls. His (wife) Ay used them up, and nothing remained for his (second) wife. He acquired two measures of ground, his wife has one, he has the other; he acquired one measure for his children. He was thus rewarded for six years, presumably of military service.

ENGELBACH, R.—*A head of king Shabaka.* A large head of granite has been attributed to Shabaka, but the defaced *ka* name might as well be that of Senusert II. This is difficult to accept, as the only portrait absolutely certain (Lahun II, xviii) is very different. The Lahun head might be that of Evers 133, in Berlin, but that could not be the so-called Shabaka. There are possibilities quoted of three kings of the xiiith dynasty agreeing with the traces of the name. The double crown, the form of the back pillar, and of the uraeus are all claimed as being unknown in the Middle Kingdom.

ENGELBACH, R.—*Evidence for the use of a mason's pick.* From the state of work on granite the use of a pick of metal seems most probable. More deeply cut work was done by a row of tubular drill holes.

ENGELBACH, R.—*Direction of inscriptions on obelisks.* The large obelisks have the side inscriptions reading outward, and the back and front reading away from the axis. Exceptions are discussed.

ENGELBACH, R.—*A peculiarity of dress in the Old and Middle Kingdoms.* In the Old Kingdom the loin cloth is wrapped round clock-wise, but reversed in the Middle Kingdom. In the New Kingdom either way was followed.

ENGELBACH, R.—*The sign $\overline{\text{dmm}}$ ST.* This is proposed to consist of a long cord, shortened by zigzagging, and the zigzag held by the ends of a cord coiled round the first and passed as bows at each end. On pulling the ends of the second cord the whole tie falls apart. It certainly thus makes up exactly the appearance of the hieroglyph.

ENGELBACH, R.—*An Ancient Egyptian "Dress-bow."* This shows how the belt fastening could be tied to have the appearance shown on the statues.

BOAK, A. E. R.—*Select papyri from Karanis*. (1) Contract in 277–282 A.D. by Aurelia Taësis borrowing 3 talents from Aurelia Thaisarion to pay a debt to her father. Taësis agrees to do weaving and domestic service to Thaisarion; but if she defaults she may be sold up.

(2) A notice in 112 A.D. by Sambatos, that his father Pakusis has died and his name should be removed from the register.

(3) A declaration in 214 A.D. of property liable to taxation, by a Roman citizen of Antinoopolis. Three plots of land were to be removed from orchard register liable to cash tax, and put in corn register liable to tax in kind. A fourth plot was sanded over, and not taxable.

(4) A petition in 211 A.D. by tenants complaining that the seed inspector had not supplied material needed each year for a weir or sluice, and the irrigation was imperilled.

(5) Application for a permit of residence in 188 A.D. Valerius Clemens wished to go to stay in the Arsinoite nome; he proves his military service, a letter from the prefect certifying his discharge in 177, with three witnesses of his identity, and he obtained the signature of the examining official, and of the keeper of the records.

FIRTH, C. M.—*Excavations at Saqqara*. This describes the temple of Userkaf, with a plan. A splendid colossal head of the king, three times life size, was found, with the face absolutely perfect. This is a most welcome addition to the royal portraits. The nose and chin are rather short, and the mouth very wide and straight. The temple lay on the south of the pyramid, a large peristyle court, a small pillared hall, and three chambers. On the east of the pyramid was a small offering place lined with red granite, paved with black basalt. A small pyramid on the south is supposed to be that of the queen; another on the west may be for *heb sed* ceremonies.

The pyramid of this first king of the vth dynasty continued the methods of the ivth dynasty, as it is built of sound blocks; the system of walling and rubble had not yet begun.

Two immense Saite tombs had been cut into the temple site, using the earlier stone work as a quarry. The protection of these tombs was by a wide shaft filled with sand, so that great labour would be needed before gaining access. Much the same was done by Senusert III for his Abydos cenotaph. One burial remained intact, with 42 fine amulets, and all the usual outfit.

ZIKRI, A.—*Fragment Copte sur le Patriarche Pierre d'Alexandrie*. This recites the birth and baptism of Peter by his father Theodosius, and his presentation to the Archbishop Theouna.

NEWBERRY, P. E.—*Statuette of Duat-nefert*. A pedestal of a small grey granite statuette is inscribed for the *ka* of Duat-nefert born of Hemi, wife of the chief scribe of the vezier Sebekdedubebi. She was the mother of Nubkhos the queen of Sebekemsaf. Presented to Cairo Museum.

EDGAR, C. C.—*A Greek Inscription*. This was found at the Sphinx, and is a decree in honour of Sabinus, strategos of the Letopolite nome, in A.D. 23. He is praised for incorruptibility, and attention to public works. Another decree was in honour of the visit of the prefect Balbillus in the reign of Nero. He found monuments half buried in sand, and took action for improvement.

KEIMER, L.—*La Déesse dans le Sycomore, et la Déesse dans le Dattier*. A stele of the Sycomore tree with human arms and breast was found at Saqqarah, and is here compared with one in Cairo Museum with a bust of the goddess. Similarly a stele (said to be from the same tomb) bears a figure of a palm tree with two arms, as usual conferring drink and a tray of food on the adorer. This is compared with a Cairo stele on which remains the lower part of a palm tree, to which the goldsmith Neb-maky is making offerings.

GUNN, B.—*Additions to the collections of the Egyptian Museum, 1928*. The important objects have already been published. Of the miscellanea, which we need to know more about, are an Aramaic inscription from the Sphinx, a stele with Semitic and Greek inscriptions, a blue glazed plinth with Coptic inscription showing late manufacture of glazed figures, and the fresh pieces of Sinaitic inscriptions. It is an error to say that pieces were detached in 1904-5; the expedition then found the broken pieces on the ground.

LAUER, J. P.—*Quelques monuments de la III^e dynastie*. This account resumes from the previous excellent descriptions in the last volume. Beginning with the long corridor of fluted columns, these columns and their attached walling have all been inserted in the corridor after the side walls were built. On the south side of the corridor seven bays form a separate façade, before a bent passage leading to a serdab, above a chamber 80 feet below, reached from a pit to the east. To the south of the *heb-sed* court is a maze of bent passages leading to six or seven shrines, but so much destroyed that the plan can hardly be traced. By analogy there should be burials far down beneath these, but no entrance to such is known. In the court of Hetep-her-nebti, east of the pyramid, stands a block of masonry of horse-shoe form, about 11 feet across, sloping up to the curved back. Two pairs of such blocks, side by side, are in the court south of the pyramid. It is asked whether they are represented by the hemi-discs in the *sed-heb* scenes, and behind the running figure of the king in the fertility ceremony. Two large rectangles of masonry, 107×64 ft., and another nearly as long, had façades at the south end leading to shrines, for the princesses Hetep-her-nebti, and Ant-ka-s. Further north is a court, with three small shrines irregularly placed.

Adjoining the north face of the pyramid is a regular square temple 140 ft. wide and 120 ft. forward. There is no place for the usual funereal stele either in this, or in the shrines of the princesses. The temple contained two large open courts side by side, each with a row of four engaged columns at the back, and three gangways between them. There is no axial arrangement, no evident place of offering or worship, nor by any supposition of accretions can a consistent plan be imagined. The statue in its niche was not in the temple, nor in the axis of the pyramid, nor at the middle of the large court before it.

A study of the construction of the pyramid leads M. Lauer to conclude that there were three enlargements of a mastaba core, and then an enlargement as a pyramid mostly on the west of the core. From this point of view the original axial passage to the sepulchre would be in line with one of the two open courts; yet in the axis of the other court is the line of the actual passage into the pyramid. We cannot however conclude that this change explains the case, because these courts could only be built after the pyramid was enlarged; before that they would have been detached in front of it. Nor do any of these

details explain how the statue comes to be far out of the axis of any of the stages of the plan, and not in line with any of the internal passages or chamber. There have evidently been a series of alterations, and it is perhaps impossible, in the destroyed state of much of the building, for us to recover the whole history of it. In any case we must give credit for the excellent plans and study of the remains.

GUNN, B.—*A pectoral amulet*. This is a scarab on a square base, inscribed for Hor, son of Onkhef-en-ubastet, but it has belonged to an earlier man whose name has been erased, probably of the xixth dynasty.

CHEVRIER, H.—*Travaux de Karnak*. This describes the rebuilding of the column of Taharqa, also of the iiiird pylon after extracting from the foundations the earlier sculptures: the further clearance of the temple of Akhenaten, and restorations in the temple of Khonsu.

JÉQUIER, G.—*Fouilles de la nécropole Memphite*. This deals with the temple of Pepy II, in the south, and the remains of a pyramid at a kilometre S.E. of the Mastabat Faraun, which proves to be that of Ra-user-ka, second in the vith dynasty, according to the table of Abydos. The system of passages and trap doors inside, like that of Hawara, leads M. Jéquier to ascribe this to the xiiiith dynasty. The neighbourhood of the Mazghuneh pyramid apparently of Amenemhat IV, would support this view, and Frazer's scarab of Khenzer with Ra-user-ka is quoted to explain the latter name appearing at this time. In the same region, found near the surface, are some statuettes which are apparently of Asiatic divinities, and are supposed to have been left behind at the Assyrian invasion. But as there was an Aramaic cemetery of Persian age also in this region, that seems to be a more likely connection.

SPIEGELBERG, W.—*Die Weihestatuetten einer Wöchnerin*. This is a relief apparently emblematic of a birth-scene of the sun-god, attended by two cow-headed figures. Quoted in connection with this are statuettes in Cairo and Moscow of women carrying Bes or Bastet on the shoulders; but there does not seem any necessary connection with birth. Other such statuettes with Bes are in University College.

Bulletin of the Museum of Fine Arts, Boston. Dec. 1929.

REISNER, G. A.—*Furniture of Queen Hetep-heres I*. The sheet gold plating of the decayed woodwork was most carefully registered in position, and examined in order to trace the ancient jointing. Fresh wood has been made to agree with the indications, and the gold placed over it, restoring as closely as possible the original appearance. Thus there now are in Cairo the gold carrying chair, the gold armchair, the jewel box and silver anklets, and the gold bedstead. Of small objects there are gold razors, rather of the flaying knife type, and, what are strangely described as "rectangular knives." These seem obviously gold models of the usual paint slab, or ink slab, which is well known in the vth dynasty, and might well be of the ivth. It is indeed fortunate that this great find, which could only be preserved by unbounded care and attention, was not discovered by any of those who have played havoc in Egypt before.

Feb. 1930.—*A Han Foot-rule*. This is of hardened lead with goldthread inlay of inscription dated (A.D. 81). It is 9.232 inches long, divided in 10 and 100 parts. Some fine Chinese pottery of 3000 B.C. with rolling scroll pattern, is in the same number.

Art and Archaeology. Dec. 1929.

Some analyses of ancient glass should be noted

	SiO ₂	CuMgO	NaKO	AlFeO
Dark blue, Thebes, 1500 B.C.	67.82	6.33	16.05	5.44
Clear, Amarna 1400	63.86	12.04	23.46	1.32
Elephantine 200-100	65.95	8.26	21.26	2.77
Roman, Mainz 150 A.D.	67.74	7.66	21.70	4.48
Modern bottle glass	69.42	9.19	18.22	2.71

We may add that the general results of recent analyses, in search of the use of nickel in bronze, show $\frac{1}{2}$ per cent or more in a minority of the Mohenjo-Daro bronze, and in the Shubad bowl and Sinai ores; but insignificant amounts at Mohenjo-Daro, Kish, Egypt 1st-iiird dynasties, Makran, Crete, Thessaly and Khorsabad. Tin bronze is in a sixth of the Mohenjo-Daro pieces, Shubad bowl, and Kish. The full results of the British Association Committee on the question will be published.

Bulletin de l'Institut Français d'Archéologie Orientale. XXVII, pt. 2.

GUÉRAUD, O.—*Textes Latins sur tablettes de cire*. This is the re-editing of texts published by Seymour de Ricci in 1906. Cairo, No. 29811. Manumission of L. Valerius, the following name is debated, whether it is NIGRO or NOSTRO. 29808 Valeria Serapias a minor, represented by her tutor-brother, is declared to be in possession of her mother's legacy, at Arsinoe, A.D. 170. 29810 The same girl is declared to be in possession of her grand-mother's property of A.D. 148. 29807 Certificate of free birth of a child of Julius Dioscurides and Julia Amonaria. 29812 Certificate of a free birth, A.D. 62.

Inscription in honour of Amenhetep son of Hapi. This imperfect ostrakon declares the cure of a person who had slept in the temple of Amenhetep. Inscriptions about other benefits from Amenhetep are also named.

GUÉRAUD, O.—*Sur le papyrus de Ménandre*. This deals with criticism of uncertain readings by various authorities.

ČERNÝ, JAROSLAV.—*Culte d'Amenophis I^{er} chez les Ouvriers*. Maspero supposed the "servants of the place of truth" to have been a corporation for the worship and tombs of the kings, the funerary temples. Now M. Černý believes that they were the workmen of the necropolis. Amenhetep is represented as associated with various gods,—Amenra, Mut, Merseger, Khonsu, Ptah, Anuke and Sati, Osiris, Hathor, Harakhti, Taurt and Nut, mainly gods of the dead. The multitude of tablets in honour of Amenhetep I are listed and described. This king was also appealed to as an oracle in disputes, and an ostrakon (Cairo 25242) gives a list of values in question, a coffin 15 *deben* of copper, a wooden bedstead 12 *deben*, a bronze vase 20 *deben*, a basket 4 *deben*. There were feasts of Amenhetep on 29 or 30 Thoth, 30 Khriak, 30 Phamenoth, 27 Pakhons, and

11 Epiphi (the first three quarterly). On 29 Phamenoth the men with their children and wives feasted for four days, 60 of the guild and 60 outsiders. There were processions of the king, as a seated figure carried by eight workmen officiants. It appears that two or three different sanctuaries of the king had separate statues. A remarkable record of the sculptor, painter, and workmen, engaged on a temple was carved on the base of a column, to be eventually covered by the column when erected.

XXVIII.

CHASSINAT, E.—*Pseudo-architecte du temple d'Horus à Edfou*. The name of Imhetep son of Ptah appears as the designer of the temple, above a figure of him assisting the king at sacrifices. But it was not allowable for a priest to be figured in front of a king. It is therefore concluded that these are posthumous figures of the deified Imhetep, to whom the design was attributed; and such a ritual as his appears to be recorded in the list of the temple library.

HENNE, HENRI.—*Papyrus Graux Nos 3 à 8 et papyrus du Caire No 49427*. A discussion of details of the Greek texts.

WEILL, J. P.—*Textes épigraphiques inédits du Caire*. Arabic dedication of the xivth century.



GIRARD, L. S. P.—*Adversaria Coptica*. Corrections of the "Éloges de l'Apâ Victor" of Bouriant.

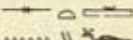
NAGEL, G.—*Set dans la barque solaire*. Texts of the New Kingdom with figures of Set piercing the serpent, from the prow of the bark of Ra.

BRUYÈRE, B.—*L'enseigne de Khabekhnet*. This wooden standard found in the tomb at Deir el Medineh, supports figures of a cat and fish. Other instances of the deities of the xvth and xviiith Delta nomes are quoted. In the tomb is a fresco of a great fish on a funeral bier attended by Anubis, with the four sons of Horus, also Isis and Nebhat kneeling at the ends.

KEIMER, L.—*Petits fruits en faïence émaillée*. A group of models are attributed to the Middle Kingdom, and the blue hippopotami and female figures truncated at the knees are certainly of that age. But as they are said to have all been found by fellahin fifteen years ago, they may well be mixed up from different sources and ages at Heliopolis. The other figures are of crocodiles, desert hares, hedgehogs, mice, tortoise, monkey, shells, and models of fruit. The paper is mostly concerned with the lore of the cutting of figs to improve the fertilization.

GIRARD, L. S. P.—*Adversaria Coptica*. Corrections on ostraka. G. T. ΜΟΥΛΟΝ "for the mill" is a loan word from Greek occurring in LXX Exodus, Jeremiah, Isaiah.

KUENTZ, C.—*Passage de la stèle de Naucratis, la lecture du sign* . The alphabetic writing  appears for "Majesty."

A propos de Westcar $\frac{6}{7}$.  to be read as "its equal" or "its fellow."

Monuments de culte de Sobk. A lintel from the Valley of the Kings has two figures of Sebek with human body and crocodile head, adored by Qen-her-khepeshef. Between the figures, back to back, is a long-leaved tree. The

dedicators' tomb at Deir el Medineh is well known. The crowns of Sebek are discussed. The recital of all the 113 cylinders and monuments on which Sebek is named "lord of Sumnu" occupies 32 pages. That place is identified with a Crocodilopolis near Gebeleyn, and probably also another place of the same name near Lahun. Three statues at Karnak name Sebek of Sumnu, who was somewhat worshipped at Thebes.

The tree behind the figures of Sebek is connected with the trees on the peculiar cylinder in Univ. Coll. (*Buttons and Scarabs*, xxvi), also with a plaque from Gurob having a tree behind the crocodile, and a scarab with a branch over the beast (Brunton, *Gurob* xli, 68, 78). Texts with allusions of trees of Sebek are quoted, and the temple of El Hibeh is supposed to be the place of a grove of these *arut* trees. On a papyrus of Har-uben, daughter of king Menkheper-ra (xxi), she is adoring a crocodile beneath a tree.

CLÈRE, J. J.—*Serviteurs dans la Place de Vérité*. A list of 34 such officials is stated, with titles and descent; 17 monuments are figured and described. Altogether this number is largely Directory-work.

XXIX.

NAGEL, G.—*Les Papyrus funéraires*. Various classes of such papyri are named; (1) vignettes with only a few words, all much alike; (2) important texts, but very different; (3) with mummiform figures and short invocations; (4) short texts and figures mixed; (5) vignettes without any order. There follows a very detailed description of the Amenemsauf papyrus, in 124 pp. This is the first in Deveria's catalogue of the Louvre. There does not appear to be any important novelty in the rendering, so it is impossible to summarise it. A full index of the hieroglyph words is included.

PAUTY, E.—*L'Étude des Stalactites*. This deals with the stalactite feature in the Arab architecture from 1120 to 1507.

MESNIL DU BUISSON, comte DU.—*Compte-Rendu, Sommaire d'une Mission à Tell el Yahoudiyé*. This Mission has not added anything to what was published in 1905 by the British School. The plan has none of the exact positions of the walls then excavated. The final view is that the mound of Onias is part of a circular fortress older than the Hyksos, much of which was cut away in building the Square Hyksos camp. This is impossible because there are the deep foundations of stone walls of late date supporting the mound, and they are straight and rectangular. The facts which have been already published do not seem to have been known, the sloping face of the Hyksos fort was not exposed, and no objects of importance were found.

Proc. American Philosophical Society. LXVIII, p. 303.

BARTON, G. A.—*Origins of Civilisation in Africa and Mesopotamia*. The North African is termed a pure Hamitic stock; in Egypt modified by Semitic, in Somali, Galla, &c., with Kushite, in Nandi Masai, &c., with negroid stock; in the far south the Nama are modified by Bushmen. The Semite languages are Arabic, Akkadian, Assyrian, Canaanite, Phoenician, Aramaic, Hebrew, and Abyssinian. The Hamitic and Semitic are originally related, having many points in common, "The one theory which satisfies the facts is that the Hamito-Semitic

race originated in North Africa, ... and at ... 10,000 to 8000 B.C., or earlier, some of this stock migrated to Arabia by the straits of Bab-el-Mandeb." Possibly the Arabs are mixed with a still earlier population of Arabia.

In Babylonia Prof. Barton postulates a Central Asiatic people, with painted pottery in Susa I, El Obeid, Kish Carchemish, Nineveh, and Anau, always in the lowest strata. The Sumerians pushed in from the Persian gulf, perhaps by 4000 B.C., and were the highly civilised and inventive people. The Semites came in from the Arabian side. Regarding Egypt, Prof. Barton has unfortunately not seen the results of the last ten years, which have expanded the early history so largely.

ROWE, ALAN.—*Comparison of Egyptian and Babylonian Civilisation in Palestine.* This is an outline of the influences traceable at Beth-Shan. There is no flint age there known. Graves begin with middle Bronze Age, a Cypriote dagger, and ledge-handle pottery; the history of the site ends about 1000 B.C. The general result is "the predominance of the Egyptian and Mediterranean influences to the exclusion of the Mesopotamian influence."

Antiquity. Dec. 1929.

BRUNTON, G.—*Beginnings of Egyptian Civilisation.* This paper is mainly occupied with the Badarian work which is already familiar to our readers. The fresh matter is about the earlier age, the Tasian. The pottery is mostly of wide bowls, narrowing to the top, and with a small flat base. The incised black beakers already known are proved to be Tasian. The palettes are of alabaster or limestone, rectangular. Polished stone conoid axes belong to these people, fixing the period of some already known. The skulls are much rounder, with squarer jaw and more upright face, than the Badarian. Neither corn nor linen have yet been found.

Annals of Archaeology, Liverpool. XV, 3-4.

GRIFFITH, F. LL.—*The Church at Abd el Qadir near the Second Cataract.* This article is illustrated with 24 plates, largely of wall paintings. The Church is only a minute building $9\frac{1}{2}$ ft. long, divided as a nave and two aisles each 3 ft. wide, and with a *hekel* 12×4 ft., and an annex 7×15 ft. on each side. It contains the best-preserved paintings of Nubia, dating about A.D. 1000. Unfortunately the text is written without any reference to the plates or plate list.

LORIMER, H. L.—*Defensive armour in Homer.* This article discusses at length all the evidence, archaeological and literary, on early Greek armour and dress. The general conclusion is "there are no archaeological strata in Homer; there is the use by a great poet of a poetic tradition reaching back many generations, which had dropped much and added much, and had preserved certain traits of an extremely remote past."

Palestine Exploration Fund, Quarterly. Jan. 1930.

BADÉ, W. F.—*Tell en-Nasbeh excavations, 1929.* This site, believed to be Mizpeh, has been further cleared along the city wall. In a cave were deposits of early and middle Bronze Age, the Late was absent, the Iron Age to 700 B.C. covered the rest. The abandonment of a kiln-full of pottery of the early Bronze

Age points to a conquest then. An Astarte temple was traced, a long chamber 30×8 feet, and three others square to one side of it. Figurines show the purpose. On the Tell the early Bronze Age has left most bulk. The stamped jar handles "for the king" are placed between 900 and 600 B.C. The cemetery has been found, so far not before 1200 B.C.

In a discussion, in reviews of *Gerar*, the two inscriptions (pl. xliii) are noticed, with proposed readings which do not seem at all compatible with the actual signs. It is useless to try to solve a puzzle by assuming that the ancient writer put in a meaningless sign.

April 1930.

FITZGERALD, G. M.—*Stone Age sites recently investigated*. At the caves of Shukba and el Wad there are recognised the Aurignacio-Mousterian as earliest; next come "very delicate flint points"; then Mid Aurignacian, Chatelperron industry, and on top the microlithic which it is proposed to call Natufian from the Wady Natuf. In the last were ten skeletons and a pebble carved as a human head, and bone carving of a young animal. Père Buzy records a mesolithic station south of Bethlehem with much material, published in the *Revue Biblique* 1928, 558. At Kadesh Barnea the flint work is Magdalenian rather than Aurignacian, disputed by Neuville because there is no bone work. The Tell Fara work will give a new basis for these questions, linked with Egypt.

July.

GARSTANG, J.—*Jericho*. Two systems of walls were known, a sloping revetment of stone, and a double brick wall above that. The stone rampart enclosed about twelve acres, the brick wall but little more than half of that. The conclusion of the recent work here was that the sloping stone work was of the late middle Bronze Age, cutting down through the town of that time, the early Bronze, and neolithic, into a deep fosse, built therefore about 1600 B.C. The brick walls were of late Bronze, about 1300 B.C. on the top. The absence of Mykenaeen pottery leads to the dating of the walls not later than 1200 B.C.

GRANT, E.—*Beth Shemesh 1930*. This brief account mentions a pottery kiln 17 feet deep, with early Bronze Age pottery on the floor, middle Bronze above, and early Iron Age remains at the top.

PHYTHIAN-ADAMS, W. J.—*The Mount of God*. This paper details the evidence for the phenomena of the Mount of the Law being only recognisable as volcanic. Hence, it is argued, that Mount could only have been in Midian, east of the Gulf of Akaba and Jordan valley. The column of fire by night, and smoke by day, was the guiding landmark for the Exodus migration. The great difficulty in this view is that the Mount of the Law is described as not far from the Red Sea. The stages are, from the crossing of the Red Sea, north of Suez, in three days they reached Marah, and then came to Elim. This is quite incompatible with an eastern road, but agrees with the southern road, to Gharandel. Next they were in the wilderness of Sin, "between Elim and Sinai" on the 15th day of the second month. Passing Rephidim, and the fight for the fertile Wady Firan, by the third month they next reached Sinai. This is quite incompatible with the time needed to go from Gharandel through Firan, round Ezion Geber into Midian. If the volcanic phenomena were in Midian the whole

detail in Exodus must be an entire fiction, framed in ignorance of the history, in order to agree with a spurious site for Sinai. Is it certain that there was no volcanic outburst anywhere in the Sinaitic peninsula?

CLOSE, C. F.—*The large-scale Survey of Palestine*. This recounts the advance of the 1:20,000 survey and map. The triangulation is finished north of Bethlehem, and by the coast road, and nine sheets are issued. A map for land settlement, on 1:2,500 familiar in England, is also in progress. The annual rise of four feet at the Sea of Galilee, due to winter rains, produces six weeks later a rise of two feet at the Dead Sea.

Oriental Institute, Chicago. *Medinet Habu Studies 1928-9*. By U. HÖLSCHER and J. A. WILSON. The palace and adjacent houses have now been cleared. The walls which had been largely removed by later builders have been traced, and in order to preserve the plan the fragments of brick have been capped with dwarf walls on the old lines, with a layer of sand on the top of the old bricks, so as not to destroy the evidence. Knowing how quickly old brick disintegrates on exposure, this seems the best treatment if the plan is to be preserved on the spot. Along the inside of the fortification wall stood two rows of about fifteen houses: these may well have been for the priests, as each house has a court 10 × 8 feet with a columned porch at the back, four rooms open off one side of it, and on the other one room with a staircase leading to the roof. The whole block was 50 × 15 feet inside.

The small palace adjoining the great temple had been remodelled during the reign of Ramessu III, and much of the architecture of the first building was used up for foundations in the second version. Thus it is possible to restore the original design. The palm capitals projected very widely at the top, like the capital of Sa-amen, now at Munich. Mr. Wilson gives a discussion of the exaggerated style of literary composition under Ramessu III. It is as different from the earlier work as the architecture differs from earlier building, a decadent enfeebled bombast which is quite unsatisfying.

Explorations in Hittite Asia Minor 1929. By H. H. VON DER OSTEN. This is the record of a long reconnaissance of sites around Boghaz-Keui and Amasia. A site has been fixed on for excavations, at 130 miles east of Angora, about 2000 feet across. Very fine Hittite pottery lies on the surface, but marshes all round it suggest fever. At Boghaz-Keui, aside from the finished excavation of the big temple, and of a few other buildings, the site is hardly excavated at all. Especially the deeper strata, the real "Hittite" ones, remain practically untouched. The amiability of the Turkish officials, and the kindness of the Anatolians are often praised; but the difficulty of housing and vermin strongly suggest that it would be worth while to take two or three cars for sleeping in, and in case of break-down. Almost all the young Turkish teachers are fully interested in the history and know of the sites around.

Jewish Quarterly Review. July-Oct. 1930.

BENTWICH, N.—*Philo as Jurist*. This is a long review of a work by E. R. Goodenough on Jewish law in Egypt. It deals with Philo's synthetic mode of adjusting ancient Jewish thought to modern Greek systems. The varying influences of Jewish, Greek, and Roman law, and the extent of legal punishment in various cases are discussed.

BENTWICH, N.—*Rome and Judea*, a review of a work with this title by Michel Ginsburg, deals with the two and a half centuries between Judas Maccabaeus and Titus. Five stages are distinguished;—first a protectorate, down to Pompey; second as a tributary; third under the liberal patronage of Julius and Augustus; fourth the condition as a vassal state; lastly the struggle against direct rule by a Roman governor.

ALBRIGHT, W. F.—*Excavations at Jerusalem*. This summarises the recent work of the Palestine Exploration Fund. The dating of the pottery found in 1923–5 is very fully criticised. The later work of 1927 is looked on more favourably. The whole subject needed the more detailed results from Gerar and Beth-pelet which we have now supplied, and the more precise dating by Egyptian dynasties, instead of vague Ages of Bronze and Iron.

A long and appreciative notice of *Israel among the Nations*, by Norman Baynes, may be remarked, from Prof. Hoschander.

NOTES AND NEWS.

An active season's work is anticipated for the British School in the coming winter. More will be undertaken at Gerar, where the deepest part of the mound of the Hyksos age has not yet been searched. At Tell Ajjul a large Hyksos camp will be excavated, which promises to fill the gap in our knowledge, between the Hyksos age and the introduction of Copper, and so to join on to the Neolithic series which was secured last winter.

The working party will comprise Mr. and Mrs. Colt, Mr. and Mrs. Starkey, and Mr. Harding, all from last season's work; Miss Tufnell and Dr. Parker, who were out before; and three new students, Mr. Vernon, Mr. Richmond Brown, and Mr. Norman Scott. Lady Petrie and the Hon. Director will continue their former share of the work.

The half centenary fund for the support of this expedition is in course of collection, and it is hoped that all readers will send a donation, large or small, which may be addressed to the Secretary, British School in Egypt, University College, Gower St., London, W.C.1.

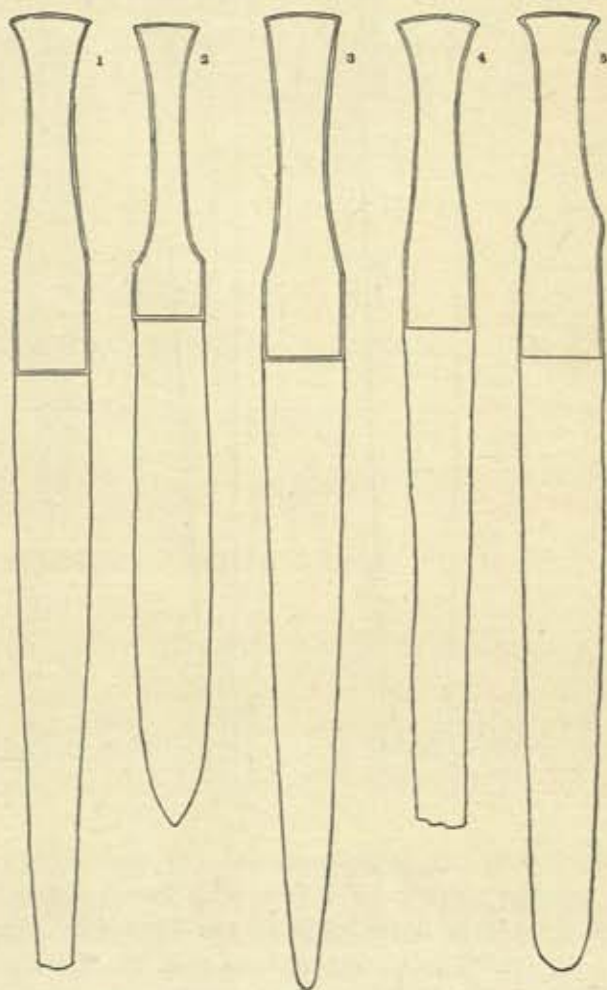
DAGGERS WITH INLAID HANDLES.

A CLASS of daggers has recently come into notice in various countries, having a metal handle cast in one piece with the blade, and bearing a plate of inlay on each side. Two daggers of this type have lately been found in Palestine, with an approximate dating, and it seems desirable to review the examples of this construction, for comparison. The drawings here have been outlined of full size, and then reduced uniformly to one third of the dimensions. They may be placed in six classes;—butt handles, pommels, encased, cusped, flat blade, and *khepesh* or falchion.

The butt handle is the simplest type, with a slight curve at the end, the inlay space shallow and long. It begins about 2000 B.C. at Nihavand near Behistun in Persia (1, 2, Brit. Mus. Quarterly iv, 4); closely the same form (3) was found at Nineveh (Brit. Mus.), and again (4, 5) at Ras Shamra near Ladakiya (*Syria* x, 299).

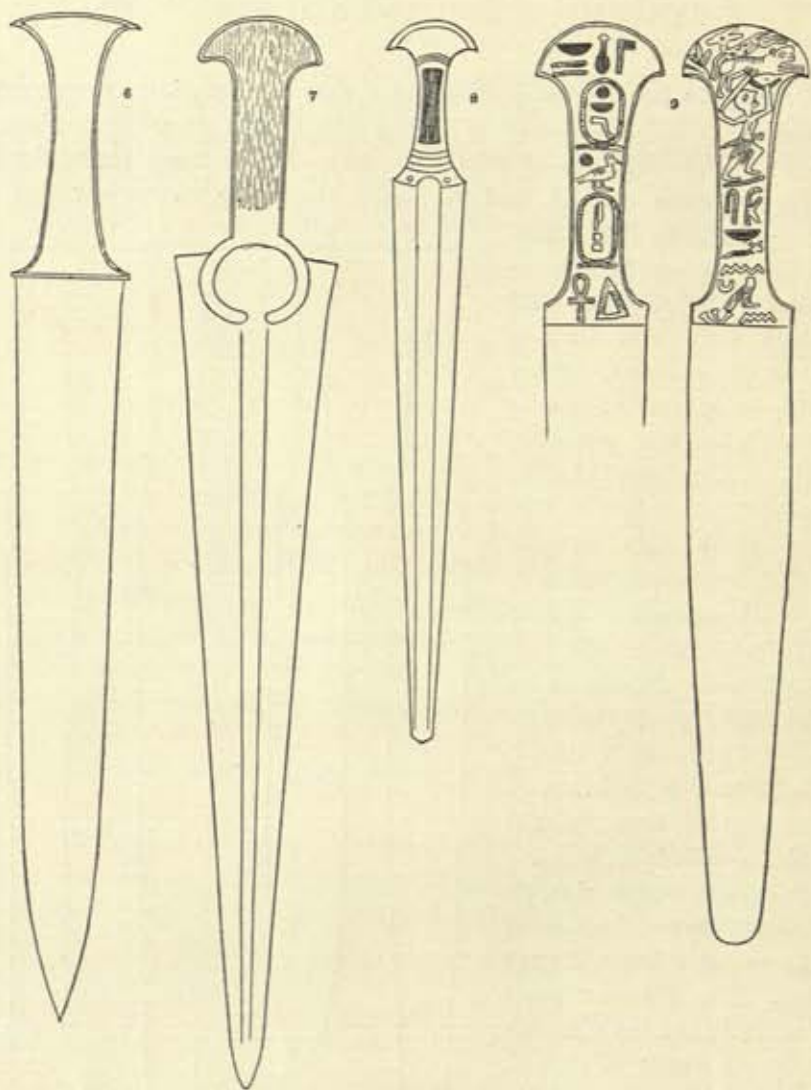
The pommel type begins with the butt type becoming wider (6), as one from Egypt (Brit. Mus.). The distinct pommel is found S.W. of the Caspian (7. *Délégation en Perse*, Mem. viii, 277, 283), with the handle only inlaid where shaded, and a crescent relief, which was copied from the form of a separate handle with a friction grip on the blade

(*Tools and W.* xxxiii, 1). The daggers of Rameses III (1170 B.C.) have the same curve of pommel, and the wide rib on the blade (8, Rosellini, *Civile*, cxxi). The fully developed pommel is on a dagger of Apepa III (1600 B.C.), with a figure of "the follower of his lord, Nehemen"; the subjects are embossed on electrum



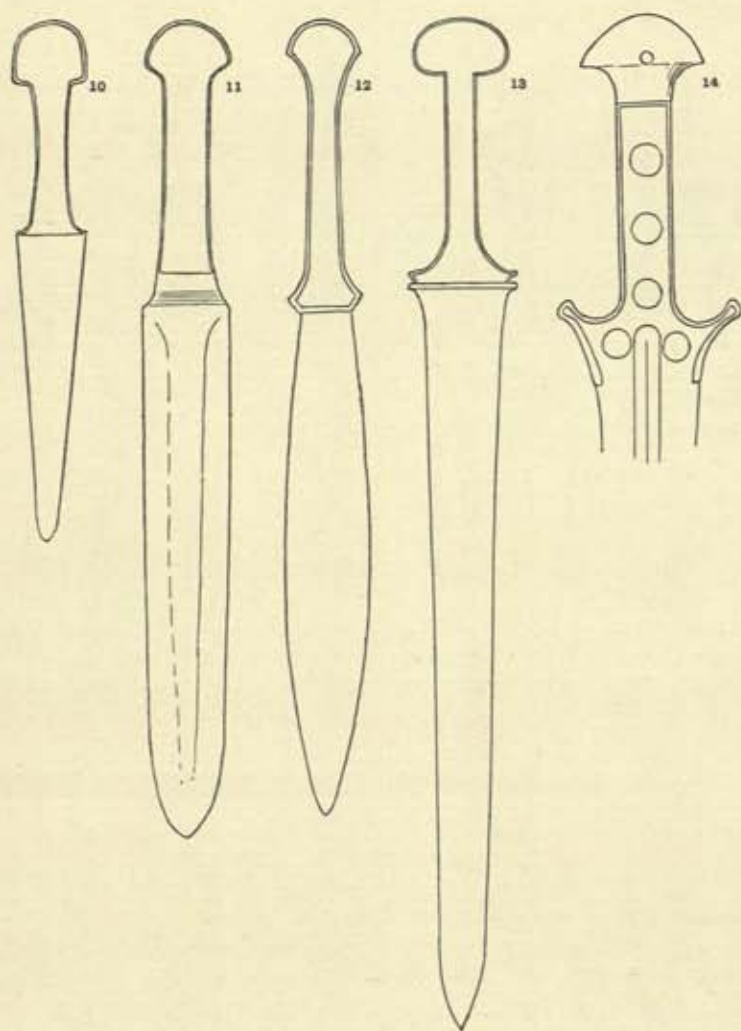
plates covering the inlay (9, Saqqarah, *Ann. Serv.* vii, 115). The name is Syrian, and is found as a companion of Zerubbabel. It seems evident that this type belongs to North Syria, and was brought thence by the Hyksos into Egypt. An Egyptian importation into Nubia of the period of Tehutmes III is of a smaller size, probably for a woman's grip (10, *Archaeol. Survey, Nubia* 1909-10, xxi, a, 3).

This type continued into the sixteenth dynasty in Palestine, associated with a chain fastening, probably to attach the sheath. One example (11) has a slight mid rib, and ivory inlay (Jerusalem Museum; *Bethpelet* I, xxvi, 102, xxvii, 851).



Another (12) is of a fine leaf form, with a narrower handle, and hard wood inlay: it is dated about 1230 by a fine scarab of Merneptah (London, *Bethpelet* II). The abrupt widening of the handle at the blade is similar to that on a dagger from Thebes (13), stated to be of the early part of the xviiith dynasty, about 1500 B.C. (*Metropolitan Museum of Art, New York, Supplement*, May 1917). This widening seems to have been the prototype of the Cretan-Mykenae type with spurs on each side (14, Knossos, *Archaeologia* lix, 56); those from Mykenae have not the inlay (Naue, *Vor-römische Schwerter*, iv, 2, 4).

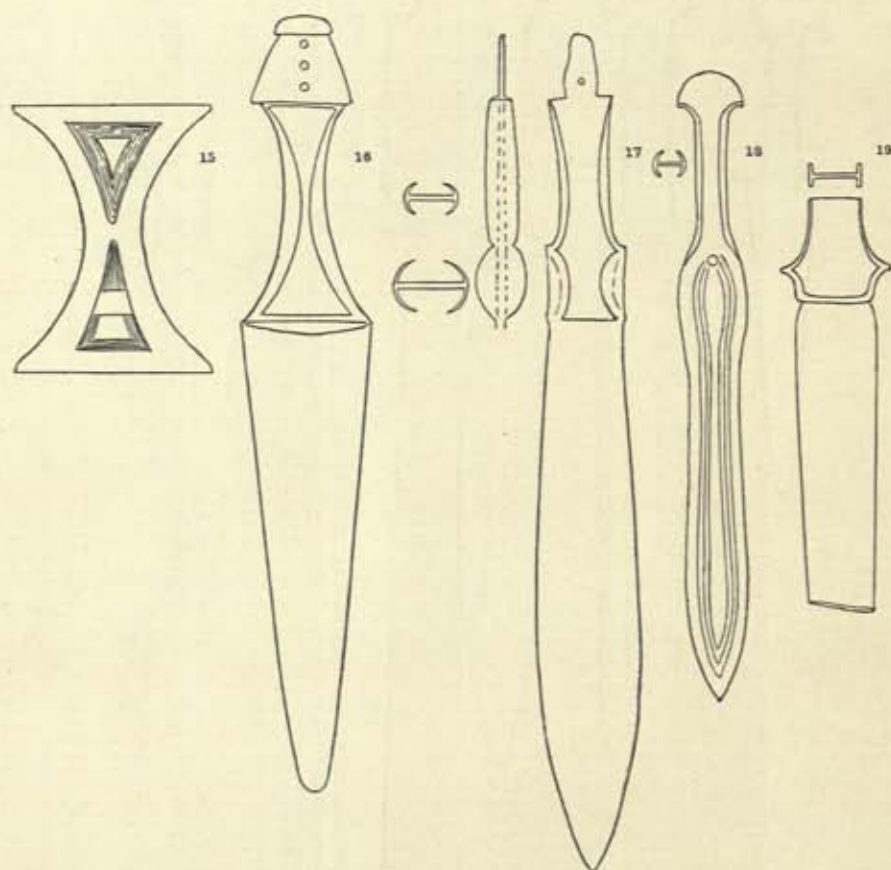
The encased handle may be considered to begin with the deep setting of the handle, as from Kazbek, Caucasus (15) of about 600 B.C. which is pierced through (*Eurasia Septentrionalis Antiqua*, v, 147). This passes into a form of overlapped encasing, also from the Caucasus (16, Redkin Lager, *E.S.A.* v, 147). These examples point to a primitive type of pierced bone handle, of quite different origin from the flat one-piece bronze handle with flat facing plates, which, as we have seen, starts in Persia, or perhaps Assyria. The encased inlay passed into a form like that of the deeply winged palstave, bordering on a socket



form. One bought at Thebes (17) is of very fine workmanship, the leaf-blade being polished, and the sides of the handle rolled over; it had a separate pommel, to allow of the inlay being slid into place (University College). A western form of the encased handle is from Knossos (18), having also a leaf-blade, with parallel lines following the side curve (*Archaeol.* lix, 82). It is of about 1500 B.C., an early date for the leaf-blade.

So far, we have been considering handles which might be held either way. If the thumb and forefinger are at the pommel, the blade can only be effectively used for striking downward, like a rapier over the collar bone, or for a hori-

zontal stab at a high level; in this position the thrust comes on the little finger, which is least effective. The other hold is with the thumb and forefinger at the blade end; a grip such as this is for striking up beneath the ribs, like the Roman short sword, at close quarters. The blow came through the thumb with the full force of the fist. To obtain the best grip on the handle for the upward thrust, a cusp was raised, giving the thumb and finger a more secure hold. A preliminary form (19) appears in late Hyksos times; it was a development of the tang, made in a shovel form to insert in a separate handle. The handle is not broken, but was only intended to stick into a socket. The projection at either side was for the fingers to bear upon, in thrusting. This is of about

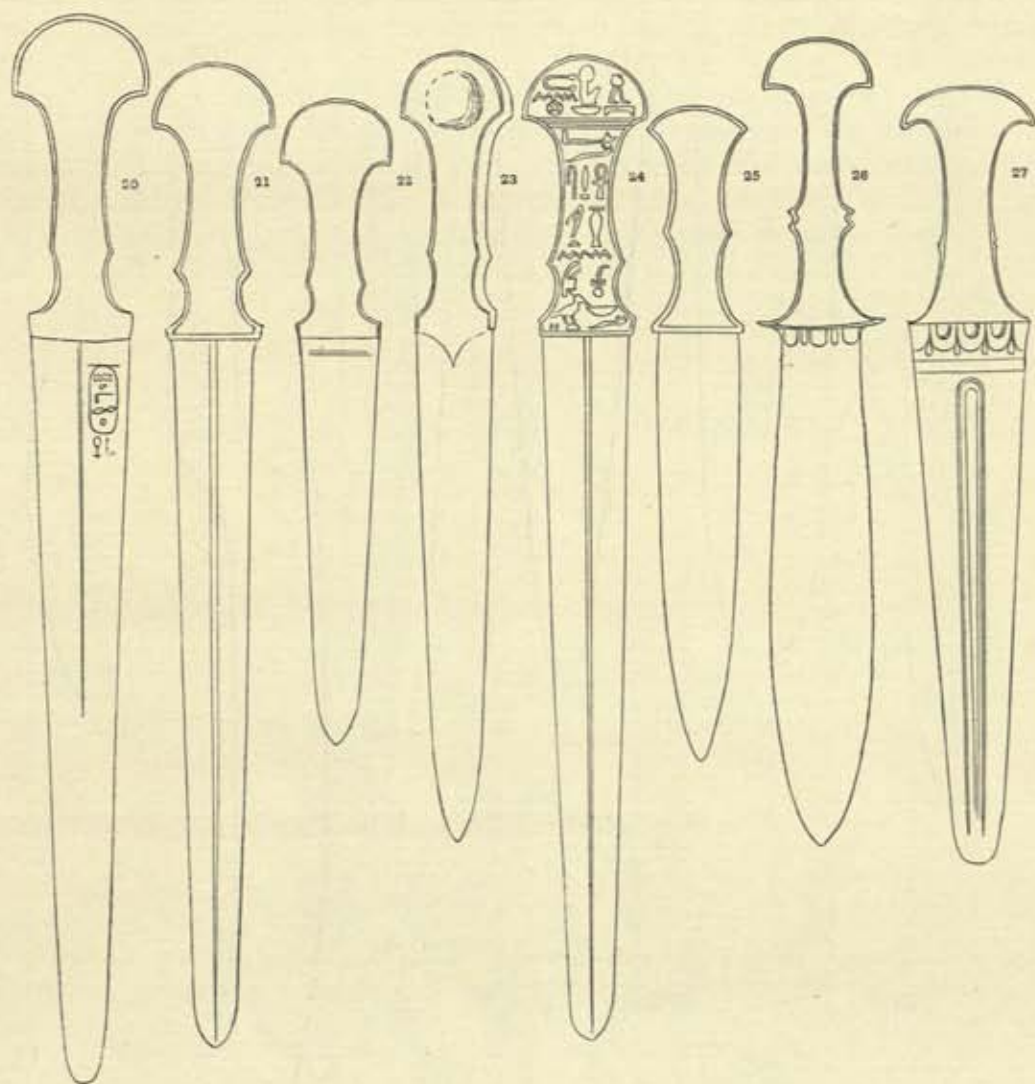


1600 B.C. (*Bethpelet* I, xi). A very fine example of the cusp handle has the name of Apepa II (20). This belongs to Mr. Corble (*J.E.A.* xi, 216). The direction of the cartouche shows that it was regarded point upward, while the name on the plain handle dagger, no. 9, was read with point downward. Another dagger (21) is from the d'Athanas collection, doubtless Theban.

A short dagger (22) has such a short grip that it must have been for a woman's hand. The handle has convex silver plates over the inlay (University College).

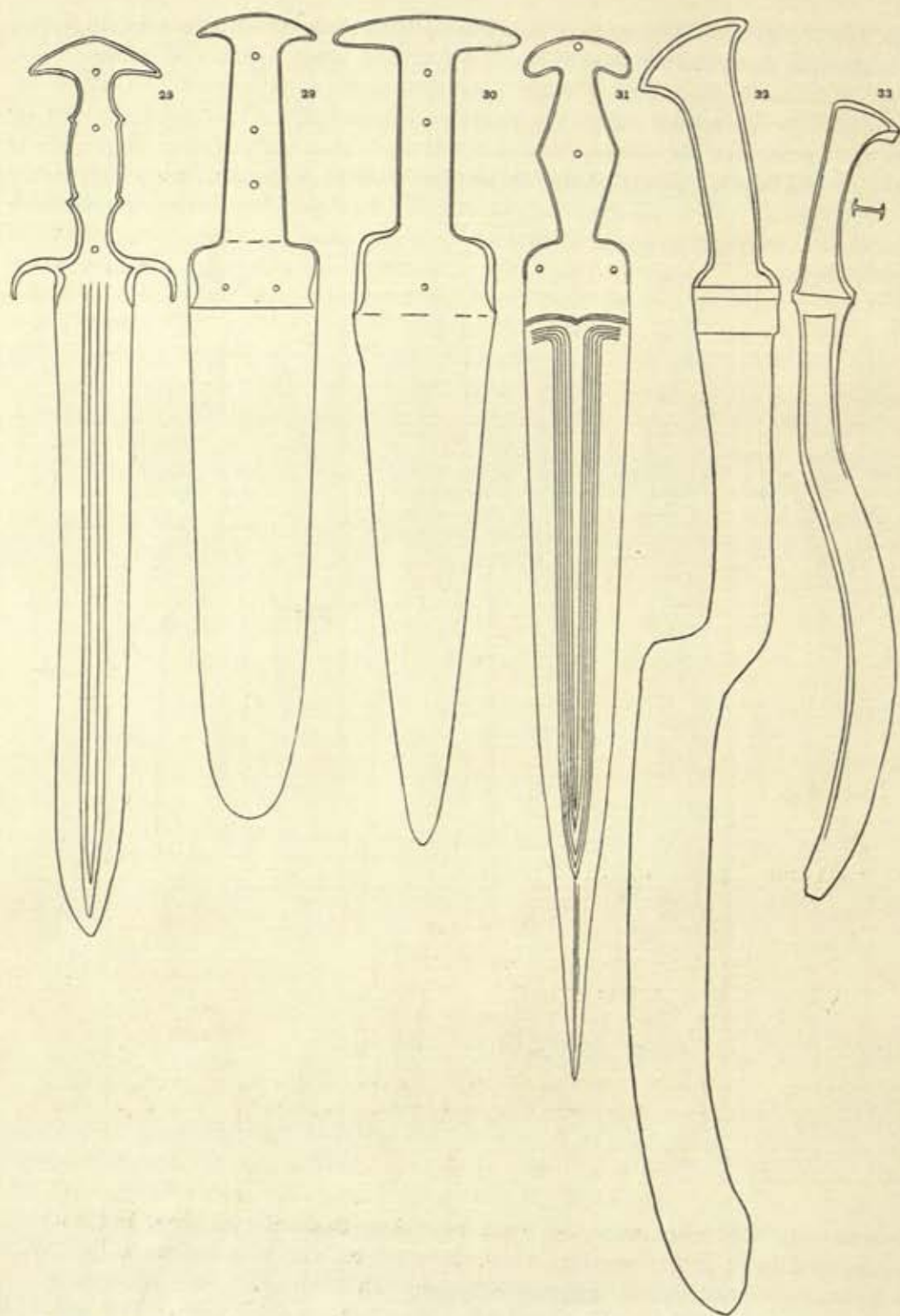
In Leyden Museum is a dagger with a boss upon the pommel (23) (*Catalogue* lxxxii, 90). A similar one (24) is in Darmstadt, inscribed "Anhur of Thinis give him life, health and wealth, praise, and favour, for the royal friend, the follower of his lord Tehuti" (see Berlin catalogue of goldwork, p. 23). The

form of no. 25 seems to have been intended to take two fingers beyond the cusp. It was bought in Egypt (Univ. Coll.). The same proportion is also seen in no. 26, from Egypt (Brit. Mus.). The pattern on it is a form of that on 27 (Turin); it is a festoon pattern with droops between, and seems unknown in Egypt, but occurs in Boeotia about 1300 B.C. (Furtwängler and Loescheke, *Myken. Vasen*, xix). The ribbing along the axis is, however, truly Egyptian, western ribbing being parallel to the edges. The peculiar form with horned



guards (28), and two cusps on each side, has the axial ribbing, but with the wide cross head of the western type. Being from the Woodhouse collection, it is probably Greek, with Egyptian influence (Brit. Mus.).

The wide blades, with cross-head handles, are western. The inlay is scarcely held at the side, but is rivetted on. No. 29 is from Korinth, about 1400 B.C. (Naue, *Vor-römische Schwerter*, v, 3); 30 is from Knossos (*Archaeol.* lix, 84); 31 is from Veii (Montelius, *Prim. Civilis. Ital.* 348), and similar forms are from Norcia (*Mon. Ant.* xxii, 151), Cuma (*Mon. Ant.* xxii, xxvi) and Terni (*Not. Scav.* 1907, 626, 636).

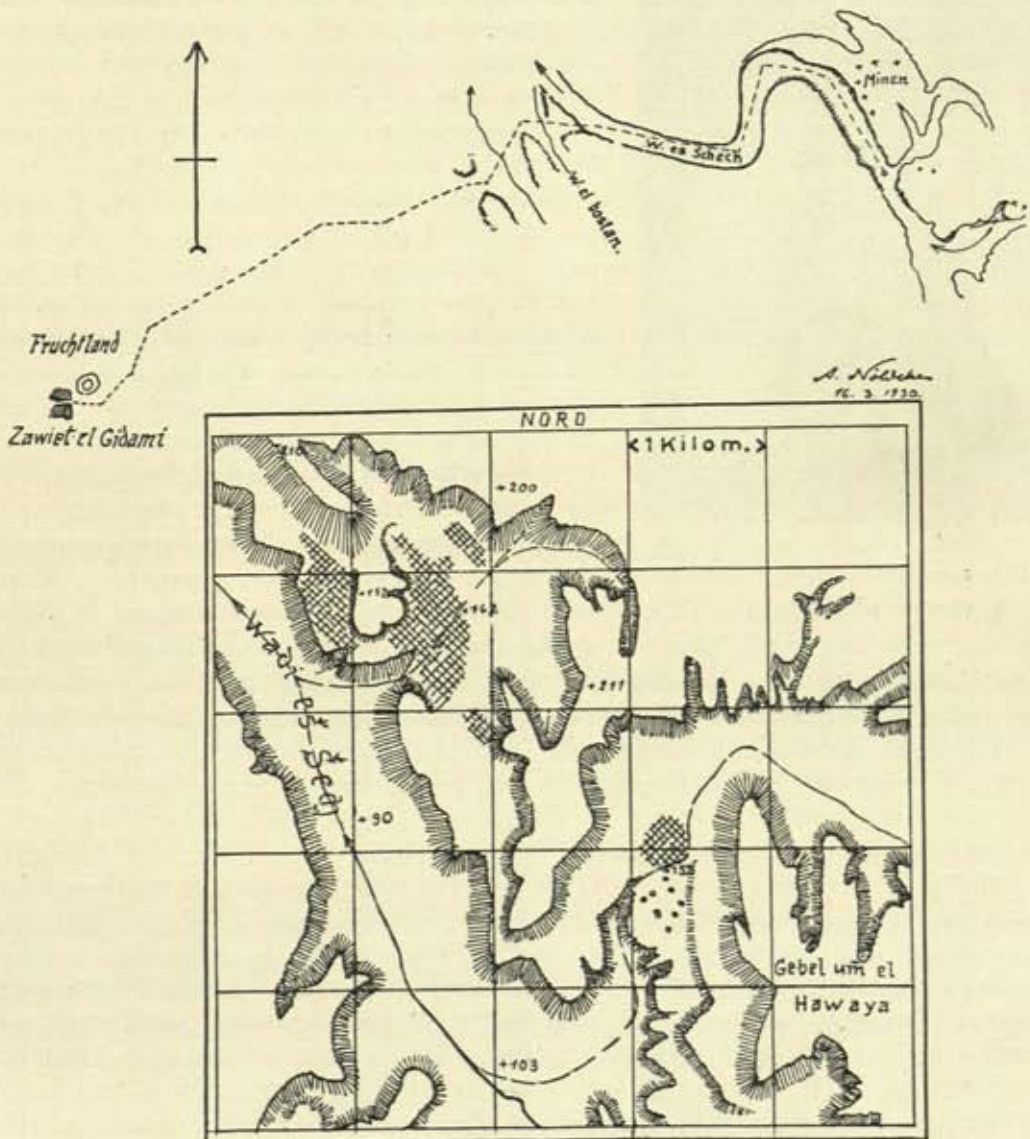


Lastly there is the falchion, or *khepesh*, the "thigh." True to its eastern origin, it has the inlay handle with the name of Hadadnirari of 1300 B.C., from Diarbekir (33), and again (32) in the time of Rameses II from Tell Retabeh, discovered by Prof. Naville (*Goshen*, p. 24). Both are in the British Museum.

FLINDERS PETRIE.

THE FLINT QUARRIES OF WADY SHEYKH.

ONE of the main tasks I had set myself in Egypt was an attempt to find again the flint mines that Seton Karr had discovered in the Wady Sheykh near Maghagha (lat. $28^{\circ} 42'$). Seton Karr published his results in the *Liverpool Annals* for 1892. He found abundant material there, and presented most of the museums of Europe and of the Mediterranean countries with his finds. In collaboration with Brotzen, I have described the material received by the Pre-historic Department of the Berlin Museum in *Prähist. Zeitschrift*, 1927, Parts 3/4. We were then able to date the site to the Campignian period, but only on



typological grounds, as we had no knowledge at that time of its situation and stratigraphy. Before setting out for the Wady Sheykh mines, I visited mining districts in Europe where flint had been produced; I studied material from the Spiennes mines in the Cinquantenaire Museum at Brussels, and, thanks to the kindness of Dr. van Giffen, of Groningen, visited with him the mining district of St. Gertrude near the Belgian frontier by Maestricht. These extensive mines are often of considerable depth. A whole system of openings served for their working, lighting and ventilation. In the interior was a maze of intersecting passages, in which flint was formerly worked. The raw material used to be cut and worked up into tools on the spot, particularly into axes, some of which were also polished, as the finds showed. These flint mines on the Belgo-Dutch frontier are usually considered to be of the Campignian period, but the polished pieces show that they must have continued in use into later times.¹



Fig. 1. Abdullah Bey Lamum,
Omdah of Maghagha.

The problems I hoped to solve by this expedition were as follows:—Firstly, to find the mines again and to place them in the latest maps, with which the Egyptian Desert Service had kindly provided me. (A study of Blankenhorn's geological maps in the Cairo Geological Museum—the originals of which I had seen, thanks to Dr. Hume—had prepared me for not expecting any clues to the age of the mines from the geological formation of the terraces.) Secondly, to ascertain whether it were really a case of a single industry on the site, or whether successive layers of different cultures could be traced at any spot. And finally, I wanted to see if the workmen's living quarters could also be found. As the programme was a big one for the short time available—two days and one night only—and as I am not good at cartography, I was very glad when Dr. Nöldecke and Dr. Langsdorf, two fellow-workers

from Roeder's camp at Hermopolis, offered to accompany me. We could not undertake a longer excursion because of the expense; this little trip alone needed eight camels; and I was only in a position to embark upon it thanks to the support of Dr. Eitingen, of Berlin, and to the generous hospitality of Abdullah Bey Lamum, Omdah of Maghagha (Fig. 1). We started from the Omdah's house, and he provided us with a guide.

Early in the morning of 16 March 1930 we left Abdullah Bey's motor at the ferry, and mounted camels on the other bank, reaching the Wady Sheykh after about four hours' ride. Then we rode to the point where the valley makes a big S-shaped bend, as we meant to climb the terraces at this spot (Fig. 2). We therefore left the camels and the luggage behind, and looked for a place where the rocks receded whence we could best make the ascent.

¹ Bibliography in Ebert's *Reallexikon*, under *Bergbau*.

After a short and difficult climb up crumbling rock we reached the top of the plateau. Before us rose another hill, with a spur of a peculiar shape immediately in front of us, which served us as a landmark (Fig. 3). We soon realised that we had come to the right place, for the mines lay a few yards to our east, in long rows and big stretches, one after the other (Figs. 4 and 5). They were circular in shape, and surrounded by a wall of limestone chippings, their centre filled with light sand. The quarries themselves were flat (Fig. 6), and the workable layer of flint can only have been small. This had already been concluded from an examination of the implements from the Wady Sheykh, as some of them bear traces of flint cortex on both sides, and it was now proved. The mines must have been extremely productive once. In the course of millennia the uppermost limestone layer of the plateau had decomposed with the action of wind and sun, and the ground is covered with many thousands of flint fragments. The first day we contented ourselves with pacing out the site, in order to ascertain its extent and mark it on the map, so that we might make the descent into the valley before dark. Next day we decided to separate. Our guide had told us that he knew another place in the neighbourhood where quarries were also to be found, so the two men started for this place, whilst I remained at the first site. I found a quantity of the well-known Wady Sheykh implements, but realized that Seton Karr had cleared the site very thoroughly, and had left little behind worth taking. This did not trouble me much, as I had come to study the site, not to find new material, and I only wanted specimens to show that we had really been to the right place. Those I found had mostly been broken in manufacture and were, therefore, throw-outs; they tallied exactly in type and technique with those already known. In addition to these implements I picked up a few potsherds between the heaps of throw-outs on the terrace. They were all polished thin by sand and were well baked, so that they rang when struck. In colour they are brownish to reddish. With a solitary exception they had been made on a potter's wheel. The exception is considerably coarser than the rest and its fracture shows a dark, unburnt layer. It appears to have formed part of a plate, whilst the others seem to be fragments of bellied vessels. Part of the narrow neck of a bottle was also found. All the ware is coarse and without ornament. It is unlikely that it belongs to the mines, but this could only be settled, of course, by digging. The pottery appears to be much more recent than the flints, and may, indeed, have been left behind by present-day nomads, such as we met down in the valley. There was no sign of dwelling-places on the plateau; these are probably to be sought in the valley, and not on the heights. It is to be assumed that water would be found at not too great a depth, so that a well could be sunk. Camel-thorns grow at the bottom of the valley; on our return journey we followed the Wady to its entry into the Nile valley, and in the last reach we found a little palm grove with a well.

My companions returned in the afternoon, and they, too, had found what they had sought. They brought back a few fragments of flint implements, which were not much worked, and resembled those already known from the Wady Sheykh; one specimen had been produced by a few strokes cut across its main axis. They too had been unable to detect any variation in culture. They had also found sherds of the same sort of pottery. The mine-fields on the second site are not as extensive as those actually in the Wady Sheykh.



Fig. 2. Ascent of the Plateau.



Fig. 3. Landmark Hill by the Flint Quarries.



Fig. 4. Working Site of Flints.



Fig. 5. Working Site of Flints.

With the return of the two men to our camp in the Wady Sheykh, our task was ended, and we could start the return journey to Maghagha; this we reached late at night. We said goodbye to the Wady Sheykh in the hope of returning some day to excavate it systematically, for only in this way can all its problems be solved and our conclusions enlarged; the importance of the site in the development of the cultural history of the Nile valley calls for this to be done.

ELISE BAUMGÄRTEL.



Fig. 6. Site of Flint Quarry.

THE ANIMAL SYMBOLS OF THE EVANGELISTS.

SINCE early Christian times the Evangelists have been often represented in Western art by four symbols that have their origin in the descriptions given in Ezekiel's vision of the four living creatures (i, 10 and x, 14 and 22) combined with that of the four beasts in the Apocalypse of St. John (iv, 7). These symbols usually take the form of a man (later an angel) for St. Matthew, a lion for St. Mark, an ox or a calf for St. Luke, and an eagle for St. John; they are generally winged and nimbed. It is not my intention to discuss the possible influence on Ezekiel's mind of semi-human, semi-animal watchers at Assyro-Babylonian palaces and temples when he was "among the captives . . . in the land of the Chaldeans by the river Chebar," nor to enter into the various meanings attached to these symbols by theologians from the second century to the Middle Ages. It is interesting to note in this connection an instance of the later influence of an Assyrian motive, namely, that of columns resting on lions and bulls—a motive that was spread by Lombard artists throughout Italy. The link was made by illuminated MSS. In the 6th century the Syrians ornamented Gospel MSS. with arcades, under which they wrote the Canons. In following this practice the monks of Mesopotamia had before their eyes the ruins of Assyrian palaces, and there they found the motive of columns resting upon animals. The oldest MSS. extant are not earlier than the 11th century, but it is evident that a host of earlier ones must have existed, since Carolingian MSS., which are so often inspired by Syriac, already show columns resting upon animals. (Mâle, *L'art religieux du XII^e siècle en France*.)

My theme is a peculiar form of the Evangelistic symbols, namely, human bodies surmounted by animal heads, which sometimes take the place of entirely animal shapes, and to emphasize—in view of the several accepted cases of Egyptian influence on religious art, to which I will return later—the possibility of Egyptian influence in originating this particular and peculiar form.

The symbols of the Evangelists are so familiar that they are often accepted readily without question, so that a few introductory remarks may not be amiss. From the first centuries of the Christian era it was admitted that the four creatures first seen by Ezekiel near the river Chebar and afterwards by St. John round the throne of God, symbolized the four Evangelists. Of the various explanations offered by the early Fathers of the texts dealing with these visions in Ezekiel and Revelation, Jerome's was the one that triumphed in Western theology. His explanation was founded upon the opening verses of the different Gospels: "The first face, that of a man, signifies Matthew, who begins to write, as of a man, the book of the generation of Jesus Christ, the son of David, the son of Abraham; the second, Mark, in which is heard the voice of the lion roaring in the desert, 'Prepare ye the way of the Lord'; the third, that of the calf, prefigures St. Luke the Evangelist, commencing his

history from the priest Zacharias; and the fourth, the Evangelist John, who having taken the wings of an eagle and hastening to higher things, speaks of God."

To symbolize or characterise the Evangelists by the four beasts of Revelation is entirely a theme of Western art, though the motive seems to derive from the East in regard to its form.¹ The application of the symbols is later in art than in theology; the earliest example of the use of the symbols is in the mosaics of the triumphal arch of S. Pudenziana at Rome, of the time of Pope Siricius (384-99), where the representation is based on Revelation iv.



Fig. 1. The symbolic beasts in Coptic art, in dark whirlwinds around.
(Clédât, *Le monastère et la nécropole de Baouît*, pl. XLII.)

Grouped round the mandorla of the Saviour, we meet the living creatures on a panel of the wooden doors of S. Sabina at Rome (6th century); these doors are nowadays ascribed to Syria. This form is obviously based on the visions of Ezekiel, and it is closely related to the famous Ascension miniature in the Gospels of Rabula (a Syriac MS. of the Gospels now in the Laurentian Library at Florence, which was illuminated in the year 586 A.D. by a monk named Rabula in the monastery of Zagba in Northern Mesopotamia). This miniature is regarded as the original of a motive that was repeated countless times in Western art;² in it the mandorla is supported by four angels and is carried by a four-winged creature with the four symbolic heads at the

¹ W. Neuss, *Das Buch Ezechiel in Theologie und Kunst bis zum Ende des XII. Jahrhunderts*. Münster i. W. 1912.

junction of the wings, which evidently represents Ezekiel's description of the cherubim.

The four beasts also occur in Coptic art, where they are represented in a similar manner to that in the Gospels of Rabula. In a fresco in the 26th funerary chapel at Bawit, which is supposed to be not later than the 7th century,



Fig. 2.

Fig. 3.

Fig. 2. St. John in the Sacramentary of Gellone.

Fig. 3. The Evangelists as human busts with animal heads in Orosius MS. (Laon 137).
(Zimmermann, *Vorkarolingische Miniaturen*, Portfolio 2, pls. 155 a, 144.)

Christ enthroned is surrounded by an aureole borne on a four-wheeled chariot, and round the aureole are the four winged creatures, of which only the ox has been preserved complete. There is a similar representation of Our Lord in the 17th chapel, but there the mandorla is surrounded by four broad wings, powdered with eyes, with a small symbolic head within each wing surface (Fig. 1). There are further instances at the White Monastery at Sohag, which are supposed to date to the 11th century, and at Esneh.¹

¹ For these and other instances, and for references, see Dalton, *Byzantine Art and Archaeology*, 1911, p. 680.

The symbolic creatures in company with the Evangelists first appear in Byzantine manuscripts in the 11th century, but they are not of frequent occurrence until the 13th, and then—as Kondakoff has pointed out—only in consequence of contact with Western art.¹

As regards the position of the symbols on crosses, book-covers, &c., the man and the eagle are usually uppermost, the former on the (heraldic) right, the latter on the left, whilst the lion and the calf are similarly placed below. In the early examples, however, these relative positions are not constant.

Symbols of the Evangelists in human form with animal heads occur in early sculpture and in the earliest MSS. They were of frequent occurrence, though not the rule, in the later Middle Ages. They are often alluded to as Egyptian-like, or looking like gods from the Egyptian pantheon. Some authors have deplored the irreverence or bad taste shown in this method of representation, and have rejoiced that it was discontinued. In discussing this form in their *Dictionnaire d'archéologie chrétienne et de liturgie*, Cabrol and Leclercq ask whence arose this idea of substituting animal heads for the heads of the Evangelists? Did it arise at Alexandria, whence so many ideas spread to the Christian world? They remark that it is possible but that there is not the faintest clue in this direction. They mention further a Roman custom of making fun of certain public personages by giving them a mask of an animal, probably appropriate to their character, and they wonder if the idea of applying this irreverence to the Evangelists arose in this way.

Figures of the Evangelists with animal heads were once to be seen in the vault of the atrium leading to the Chiesa dei pagani at Aquileia,² dating to the 4th century, or perhaps the 11th.

Sometimes the Evangelists are winged, as at Aquileia, and sometimes they are wingless (Bib. Nat. Paris Lat. 12048, *Sacramentary of Gellone*,³ circa A.D. 780); sometimes they are full-length figures (Fig. 2), and sometimes only busts, recognisable as human by the hands and vestments (Orosius MS. Laon 137, circa A.D. 760 (Fig. 3)).⁴ Sometimes the heads are difficult to identify, and then the occasional presence of the names of the Evangelists is very welcome, as in a 10th-century MS. in the Bodleian Library, "where the head is as much like an eagle as an ox, but 'Luc' is written on the Gospel carried in his hand."⁵

¹ W. Neuss, *Das Buch Ezechiel in Theologie und Kunst bis zum Ende des XII. Jahrhunderts*. Münster i. W. 1912.

² Giandomenico Bertoli, *Le Antichità d'Aquileja*, 1739, pp. 404 and 405; more easily of access in G. Heider, *Mittelalterliche Kunstdenkmale des österreich. Kaiserstaates*, vol. 1, 1858. Article by R. von Eitelberger, *Der Patriarchensitz und die Kanzel zu Grado und das Baptisterium zu Aquileia*, Figs. 25 and 26.

These figures are usually quoted as one of the earliest instances of the animal-headed human form. According to Janitschek (*Geschichte der deutschen Malerei*), historical probability is in favour of their execution after the restoration of the Cathedral in 1031.

³ E. H. Zimmermann, *Vorkarolingische Miniaturen*, Portfolio 2, pl. 154 c. (Symbolic figure of St. Luke with the head of an ox.) Fig. 2 in this article is from pl. 155 a and shows St. John, with an eagle's head and wings.

⁴ E. H. Zimmermann, *op. cit.* Portfolio 2, pl. 144, also Ed. Fleury, *Manuscripts à Miniatures de la Bibliothèque de Laon*, 1863, pp. 11–15, pl. 2. This book, the *liber Orosii presbyteri ad Augustinum episcopum historiarum contra accusatores Christianorum*, was composed in the 4th century to refute the accusations made by the last heathens, who maintained that Christianity was the cause of all the evils from which the Empire had just been suffering.

⁵ L. Twining, *Symbols and Emblems of Christian and Medieval Art*, 1885, pl. 45, No. 15, p. 102.

In mentioning this type, Martigny (*Dict. des Antiq. chrét.*, p. 297) characterises it as differing entirely from known types; it is, however, the only one to be found on pre-Norman carved stones in England. It occurs on cross-shafts at Halton,¹ Lancashire, and Ilkley,² Yorkshire; on a cross at Sandbach,³ Cheshire, and on a slab that was found buried beneath the chancel in Wirksworth Church,⁴ Derbyshire (Fig. 4). Of these, the Wirksworth slab is of peculiar interest, as there is a clue to its date. On it the busts of the Evangelists occupy the angles of a cross, in the centre of which is the Lamb. The date of the carving cannot, therefore, be much later than the year 692, in which year the



Fig. 4. The Evangelistic symbols on the slab in Wirksworth Church.

Quinisext Council at Constantinople decreed that the actual figure of the Saviour was to be used instead of the symbolic Lamb.

With these examples Romilly Allen includes two cross-slabs that were found at Kirriemuir and Inchbrayock in Forfarshire,⁵ so they should also be mentioned here, though they are not so convincing, to my mind, as the others. On the Kirriemuir slab the background of the cross is divided into four panels, containing on the left and right of the head of the cross two symbols of Evangelists. These two are treated in the same way as on the crosses at Ilkley and

¹ J. Romilly Allen, *Pre-Norman Crosses at Halton and Heysham in Lancashire*, in *Journal Brit. Archaeol. Assoc.* vol. 42, 1886.

² J. Romilly Allen, *The Crosses at Ilkley*, in above *Journal*, vol. 40, 1884.

³ J. Romilly Allen, *Early Christian Symbolism in Great Britain and Ireland*, 1887, p. 155, Fig. 40.

⁴ J. Charles Cox, *Notes on the Parish Church of Wirksworth* (revised edition) 1916, and S. P. C. K. *Notes on Famous Churches and Abbeys: St. Mary's Church, Wirksworth*.

⁵ J. Romilly Allen, *Early Christian Symbolism*, p. 268, note 1.

A. E. 1930.



Fig. 5. 15th-century cover of the Golden Ada Codex, Municipal Library, Trèves.
(From Egid Beitz, *The Holy City of Trèves*. Augsburg: Dr. Benno Filser Verlag.)

Halton, the bodies being human, whilst the heads are those of the symbolic creatures. On the left and right of the shaft are a pair of ecclesiastics or saints holding books.¹ The figures of the Evangelists so-called are facing each other in the usual way, and they have human feet showing below a short skirt, but they do not carry a book in a human hand, and the heads, which are not

¹ J. Romilly Allen, *Early Christian Monuments of Scotland* III, p. 227.

nimbed, are impossible to identify.¹ The slab found at Inchbrayock² is incomplete, with only the two figures on the right and left of the head of the cross remaining; like the Kirriemuir figures they have winged human bodies with symbolic heads, but both face the same way, and one has an unmistakable bird's head.

The examples given by Cahier³ are as follows: on a stoup; in an evangeliary from the Abbey of St. Croix (founded by St. Radegund), now in the library of Poitiers (No. 174); on a wooden writing-desk said to have belonged to St. Radegund; and on an oliphant at Metz, which may be of the 11th century. In the High Middle Ages the figures of the Evangelists often showed animal heads, as in a rose window at Strasburg.⁴

The four following instances may be quoted because of their beauty and interest, and also because they illustrate the range in time of this mode of representation. Firstly, a processional cross in the Schnuetgen Collection of Christian Antiquities in the Kunstgewerbemuseum at Cologne (No. H. 584); this was from the workshop of Roger of Helmershausen who wrote, under the monastic name of Theophilus, his famous *Diversarum artium schedula* about the year 1100. On this the busts are accompanied by a couple of words from the beginning of their respective Gospels to indicate their identity (*e.g.* *In principe* for the eagle-headed bust). Secondly, a large miniature facing the second Gospel in Hereford Cathedral MS. O. 1. viii, which is of the 12th century. In this miniature St. Mark is shown as a winged man with a lion's head, seated, and engaged in writing his Gospel.⁵ Thirdly, the magnificent full-page B of the Windmill Psalter (Morgan MS. 102), which is late 13th-century; it contains roundels with animal-headed Evangelists, who are seated, clothed and nimbed, and have delicately drawn human hands and feet.⁶ And fourthly, the 15th-century cover of the Golden Ada Codex in the Municipal Library at Trèves (Fig. 5)⁷ where the shape of the panels called for full-length figures.

In emphasizing the influence of illuminated manuscripts on 12th-century sculpture in France, Mâle⁸ describes and illustrates a capital at Moissac with representations of the Evangelists, which he states are self-revealing with regard to their origin. They are in the form of "monsters" with animal heads and human bodies, just as in many manuscripts of Beatus.⁹ A motive¹⁰ so strange and so isolated in 12th-century art in France clearly proves, he continues, that the artist was inspired by one of these manuscripts. Mâle further remarks on the strange and mysterious character of the book, which takes us beyond Beatus

¹ Stuart, *Sculptured Stones of Scotland*, 1856, vol. 1, pl. XLIII.

² *Ibid.*, vol. 2, pl. II.

³ Cahier et Martin, *Nouv. Mélanges archéol.*, vol. 2, p. 108 ff.

⁴ Cahier, *Caractéristiques des Saints*, p. 393.

⁵ Burlington Fine Arts Club, *Exhibition of Illuminated Manuscripts*, Illus. Cat., pl. 24, 1908.

⁶ *Ibid.*, pl. 44, and E. G. Millar, *English Illuminated Manuscripts from the Xth to the XIIIth centuries*, 1926.

⁷ From *The Holy City of Trèves*, translated from the German of Egid Beitz by L. B. Ellis. (Augsburg: Dr. Benno Filser Verlag.)

⁸ E. Mâle, *L'art religieux du XII^e siècle en France*, p. 9.

⁹ A commentary on the Apocalypse, composed in Spain by Beatus, abbot of Liébana, in 784. His book was adopted by the Spanish Church and copied from century to century. Its admirable miniatures were reproduced from the 10th century to the 13th. No existing copy is older than the 10th century.

¹⁰ This motive occurs in MS. Nouv. acq. lat. 2290 f. 56 v and f. 71 v and in the Apocalypse published by Bachelin, *Descript. d'un manusc. de l'Apocalypse provenant de la Bibliothèque d'Astorga*.

himself to the Christian East of the first centuries; Beatus borrowed largely from the ancient commentators of the Apocalypse, and it is possible that his miniaturists copied the illuminations of a manuscript from Egypt or Syria.

Forty years ago Janitschek¹ traced the animal-headed Evangelists of the Sacramentary of Gellone to Syrian fancy, and Zimmermann² considers that there is support for this belief, though it cannot be proved, as no Syriac manuscripts with these representations have come down to us. Baumstark³ has drawn attention to the influence of Alexandria on Western liturgy, and has further pointed out in support of this tenet that only in the Egyptian Church were the four-and-twenty Elders and the symbols of the Evangelists worshipped as heavenly beings with a real existence.

So much then for the occurrence of the motive. For a possible explanation I would suggest the direct influence of an ancient Egyptian theme, namely, the Four Children of Horus, four gods who were always present at the Judgement before Osiris. Three of them, it will be remembered, had animal heads, only one (Amset) being completely human in form; moreover, the Evangelistic figures with human bodies surmounted by the heads of the symbolic creatures have two heads in common with these Egyptian deities, namely, that of an eagle and that of a man. The animal heads of these beings were probably due to Asiatic influence, as they are not known in the Middle Kingdom.

In support of this possible explanation, I may recall a suggestion of Coptic influence deriving from pagan Egypt to account for the Osiris-like position of a sceptre held over each shoulder by the enamelled figure beneath the crystal in the Alfred Jewel;⁴ furthermore, I may dwell for a moment on the continued presence of Syrian merchants and craftsmen in the West even after the fall of the Roman Empire, remembering that the term "Syrian" was often used as a general expression and also included Egyptians. "French scholarship has shown with certainty that in VI-VIII [centuries] there existed strong and direct relations between France and the East. Merovingian scribes, and first and foremost Gregory of Tours, speak many times, under the common name of Syrians, of Oriental merchants and tradesfolk as established in Frankish towns, and if we study the epitaphs and votive tablets of the period, their witness goes in the same direction."⁵ In trying to account for the excellence of the sculpture on the high crosses of Ruthwell and Bewcastle so early as the 7th century, Professor Baldwin Brown⁶ conjectured the influence of imported ivory carvings, and even the actual presence of Greco-Oriental carvers, "though any explanation must be a forced one." Brøndsted goes even farther and assumes the presence in the North of England of a colony of Oriental artists in the latter part of the 7th century, to account for the introduction of the Syrian vine motive. [These motives were already on the Moselle in the 1st century, thence brought by the Anglians. Ed.] That a cross like that at Otley, in spite of its English limestone, was made by an Oriental, is an absolutely necessary supposition.⁷ [Its duplicate is in Poland, and it came over by Norse migration. Ed.]

¹ *Die Trierer Adahandschrift*, p. 69, note 3.

² *Op. cit.*, letterpress vol., p. 90.

³ *Vorbyzantinische Kulturzentren des christlichen Morgenlandes*, p. 450, in *Hochland III*, Part 4, 1906.

⁴ O. M. Dalton, in *Proc. Soc. Antiq.* XX, p. 71 ff.

⁵ Brøndsted, *Early English Ornament*, 1924, p. 307.

⁶ *The Arts in Early England*, vol. V, pp. 286 & 311.

⁷ Brøndsted, *op. cit.*, p. 35.

In view, therefore, of all the evidence and surmises to which I have referred, it is, perhaps, not too fanciful to suggest that familiarity with an Egyptian motive and with the religious ideas of ancient Egypt may have been the origin of the peculiar manner of representing the Evangelists in human form, surmounted by the symbolic heads, instead of representing them in the more usual way by their symbolic creatures.

A brief review of some of the accepted cases of Egyptian influence on religious art may be of interest here. *St. Michael weighing the souls of the dead in a balance* is the most important figure in medieval scenes of the Last Judgement. The position of St. Michael is, indeed, one of the most curious phenomena of medieval hagiology, for his importance in theology and art is quite out of proportion to his mention in the Bible (in the books of Daniel, Jude, and Revelation). The weighing of souls is not a scriptural subject, though the metaphor of the balance is used in Daniel v, 27, "Thou art weighed in the balances and found wanting." The direct origin of weighing the soul in the balance at the Last Judgement is to be found in the Judgement before Osiris: Christian art received this theme from Egypt. The Egyptian Church gave Michael an exceptionally high place both in liturgy and art. He was associated with the souls of the dead and with their fate, either as their escort in place of the Greek god Hermes, or as the holder of the balance at the Judgement as the successor of the ancient Egyptian god Thoth, who is rendered as Hermes by the Greeks. The first conception finds expression in Greek grave inscriptions, the second in countless Coptic pictures.¹ In medieval scenes of the Last Judgement, the place of the old Egyptian monster who awaits the verdict with Oriental calm is taken by the devil, who assumes a more active part in the proceedings by attempting to grab the soul and tip the scale.

The subject known as *Christ trampling upon the asp and the basilisk* is a reference to Psalm xci, 14 (= Vulgate xc, where "asp and basilisk" are used for "lion and adder"). The scene is represented for the first time in the Christian catacombs at Alexandria, and it originated, according to Mâle,² in the Egyptian theme of Horus trampling upon crocodiles. Alexandrian ivories reproduced this subject very faithfully, and it spread to the West by their means. It occurs upon the Ruthwell Cross, together with a representation of the hermit saints, Antony and Paul, breaking bread in the desert, itself an Egyptian subject.

The Harrowing of Hell is one of the most dramatic themes in religious art. There are several passages in the Bible that have been interpreted as references to Christ's Descent into Hell to deliver the righteous Fathers, and this act

¹ Baumstark, *op. cit.*, p. 451, who adds: It is obviously the result of Alexandrian influence again, that Rome, who had nothing to do with the development of pictures of angels or of their cult, suddenly acquired a church of St. Michael, of which the dedication feast on September 29th spread throughout the entire West; that visions of the "prince of the heavenly hosts" came into vogue in Italy; that a late tomb-slab in the Catacomb of Callixtus exhibits the initial letters of the names of the archangels—M. G. R.—as a kind of magical protection for the dead; that in the offertory of the Roman Mass for the dead the invocation of Michael as Lord of the dead agrees almost word for word with an Alexandrian tomb inscription: *Sed signifer sanctus Michael repraesentet eas in lucem sanctam*. The liturgy of the Alexandrian mass spread beyond Egypt, certainly to Palestine, and perhaps as far as South Italy.

² Mâle, *L'art religieux du XIII^e siècle en France*.

of mercy was taught by writers of the second century, though, as is so often the case in themes of religious art, the details of the episode are derived from an Apocryphal Book. Strzygowski has suggested that an Egyptian romance that was popular in Roman Egypt influenced the representation of this subject in East Christian art, for in the Anastasis, Christ is sometimes shown driving His long staff into the eye of Hades, who lies bound and prostrate before Him. This feature seems to have been taken from the romance of Setne Khamuas, for in one of the halls of Amenti, Setne sees the rich man with the bolt of the door of the hall fixed through his right eye. It is possible indeed that the motive may derive from the fight between Horus and Set.

St. George and the Dragon. And finally, the type of equestrian saint, of which St. George is the most conspicuous example, appears to have spread from Egypt, and to have typified the triumph of faith over infidelity.

L. B. ELLIS.

A POTTERY INDUSTRY IN CYPRUS.

THERE is only one place in the island of Cyprus where red clay pottery is made by hand. It is Korno, a small village about nineteen miles from Nicosia. At other centres, such as Nicosia—the capital,—Lapithos, and Famagusta, white clay is used, and it is turned on the potter's wheel. In Egypt, it is more usual to find women engaged in the hand-made industry, while men confine their attentions to the wheel, and the same practice holds good in Cyprus.

Women may be seen at work daily, in the houses or courtyards at Korno. The red clay, which is found locally, is spread to dry outside in the sun. Then it is pounded and mixed with water ready for use. The primitive turn-table consists of two square pieces of stone, the upper one being revolved by means of a judicious kick from the worker's right foot. A round slab of pottery is fixed to the upper stone by dabs of clay. A lump of clay, roughly eight by three inches in diameter, is centred on the pottery base (Fig. 1), and the table is turned, while the worker's practised fingers evolve the lower half of a jug.

From this point onwards the jug is gradually built up by adding clay. This is rolled into a long twist in the hand and moulded to the circumference, the pot being widened or drawn in as required (Fig. 2). When the right height is reached, string is wound round the lower portion to prevent its collapse (Fig. 3); then the neck is added and finished by hand (Fig. 4). The whole surface is scraped with a split bamboo and smoothed over with a wet finger. The diaper ornament is applied by a small roller with bamboo handle.

The jug is then removed on its own pottery base and set to dry in the shade for two days. The handles are added when the pot is leather-hard, and the string is taken off and the base rounded. The jug is then ready to be fired.

The kiln is a beehive-shaped affair, made of mud with a hole at the top, and standing some six or seven feet high. Details as to firing were not obtainable, but the process would seem to be somewhat as follows:—

The pots are packed into the upper part of the kiln, the entrance of which is closed with potsherds; the fire of light brushwood (called *throumbia*—lumpy stuff) is then lighted beneath. The temperature is regulated by the draught, controlled by blocking the hole at the top of the kiln; some of the pottery is often blackened in firing, due to this primitive method of ventilation. The pottery is fired for some twenty-four hours, after which it is left in the kiln to cool for ten days.

The shapes at Korno are few and rather conservative. These are:—

- (a) Shallow bowl, flat bottomed, straight sided.
- (b) Spouted hemispherical bowl, with hood on spouted side, two vertical handles and rim at back.



Fig. 1. Stage 1. Clay being centred on wheel.



Fig. 2. Stage 2. Jug taking shape. Fresh twist of clay in potter's hand.



Fig. 3. Stage 3. Ready for the string.



Fig. 4. Stage 4. Neck nearly finished, string in position. Note kiln in the background, piles of brushwood, and the spouted bowl on the left of the picture.

- (c) Crater, with two handles.
- (d) Jug, round bottomed, with lip and handle from shoulder to rim. Diaper decoration round the shoulder.
- (e) Small *amphora*, round bottomed, with two small lug handles.
- (f) Large *pithos*, round bottomed with rim, and diaper or raised decoration round the shoulder. It is interesting to note that this type is no longer made in the large sizes that were usual formerly—the art having been lost in the last hundred years.

Various forms of fantastic and multiple pots may be seen, which bear a striking resemblance to the early and middle Bronze Age shapes.

The wares, when finished, are packed in grass, loaded on mule-carts, and driven to the various markets, where the jugs find a ready sale at the absurd price of two piastres (not quite threepence) apiece, and the large *pithoi* are sold at three shillings.

Though the potter's wheel has been in use in Cyprus since the dawn of the Iron Age three thousand years ago, the primitive turn-table, worked by women, still prevails at Korno. Jugs and jars, made in this isolated village, form the common ware of the country and are used by every housewife to carry water and store food.

J. DU PLAT TAYLOR.

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JOURNALS.

Palestine Exploration Fund. Quarterly Statement, Oct. 1930.

CROWFOOT, J. W.—*Teleilat Ghussul*. A group of shallow little mounds three miles north of the Dead Sea. The period is late Neolithic: there are several houses of stones and mud brick. Some bricks are hemispherical, or circular with one flat side and one curved, 7 inches diameter and 5 high: these seem like Babylonian plano-convex bricks. The usual bricks are hand made, not moulded, $10.6 \times 8 \times 4.7$ inches or less. The houses are regular, the largest 49×20 feet. The period is that of site A at Tell Fara, having the same fan scrapers and many usual flint forms, saddle querns, mortars, mace-heads, polished axe heads, and little conical pots. Pots have red bands, or are incised. The whole place had been burnt.

Beth Shamash.—This summarises what has been already reported here.

Megiddo.—The whole area of $13\frac{1}{2}$ acres is now being worked over. Stratum I is dated to 350 B.C. Strata II and III belong to the Israelite monarchy, and stratum IV is being opened, and the N.E. gate of the city is found, one course of well dressed ashlar.

HAMILTON, R. W.—*Two churches at Gaza, described by Choricus of Gaza*. Ten pages of flowing description of the great churches, sufficient to form a plan.

PHYTHIAN-ADAMS, W. J.—*The Mount of God*. This continues a paper already noticed, see p. 95. The Merneptah date of the Exodus is stated to rest entirely on the place-name Rameses. This is not at all the case; the total absence of reference to Egyptian occupation in the book of Judges, and the length of the priestly genealogies, both show that the Exodus could not have been much earlier. The route here stated across the wilderness to Ezion Geber and then down into Midian does not agree with that described in Exodus, as we have already noted. It is quite outside the facts to assert that Moses could not have avoided Egyptians in the Sinai peninsula; the Egyptians only went rarely to the mines and they are two days' journey from the Wady Firan—Paran. If Mr. Phythian-Adams' point of view is accepted, we must conclude that the account in Exodus was written up long after, to fit the wrong locality. The theory that Midian was the site of Sinai is contradicted by Ex. xviii, 1-12. Jethro has a journey from Midian to reach Sinai, and Moses has to inform him of what happened in Sinai.

Société Égyptologique de Leningrad. 4.

CHOLPO, N.—*Le roi Amenî*. This name of a king in the well-known prophecy, is associated with a name Mão-kheru, which Prof. Struve links with the name

of Amenemhat IV, but it also appears as the golden Horus name of Amenemhat II. There is no proposal here of a sense which seems the most likely politically, namely that the discourse was a political wail over decadence in the end of the xith dynasty, in the interest of the vizier Amenemhat, when he saw his way to the throne, and wished to influence popular support. To name him in full would be too pointed, but the common abbreviation could be used without offence.

MATTHIEU, M.—*Quelques remarques stylistiques sur la littérature du Moyen Empire*. This notes in detail eight analogous sentences in "Sanehat" and the "Shipwreck." The conclusion is that "Sanehat" was so popular a tale that it influenced the composition,—or the copying,—of the "Shipwreck."

STRUVE, V.—*Hymne rituel au musée de l'Ermitage*. This consists of five or six lines on each side of an ostrakon of the xxth dynasty. It comprises two hymns to Ra, probably used at a festival. Some other papers on prayers to Isis, a Coptic paper, and lists of the Society are in Russian.

No. 5. STRUVE, V.—*Le roi Ameni*. This repels the proposed identification with Amenemhat II.

CHOLPO, N.—Remarks on the previous paper.

PIOTROVSKI, B.—*Deux enseignes prédynastiques*. This paper points out that Evans' quotation of a fish standard, from *Naqada* lxvi, 4, is not valid as the sign is partly effaced.

PIOTROVSKI, B. and SNEGUIREFF, T.—*Objets prédynastiques du musée de l'Ermitage*. With 2 plates. This describes nine slate palettes, one in the form of a lion, another is a boat with a network with three losenge openings, rising from the deck: apparently representing the net thrown over a boat load of straw to hold it down. There are six black-topped vases of good period, and two plain red pots. Of white-lined ware is a dish and cup. An alabaster and a breccia vase are of the iind dynasty. A cylinder jar with lattice lines, and two ship vases, are usual. But two Gerzean painted vases, one with two aloes, the other with eight large spirals on it, are uncommon.

MATTHIEU, M.—*Ostrakon 1125, musée de l'Ermitage*. This is of nine lines. It seems to praise a youth,—probably a king by the uraeus on the hieroglyph; and describes him as worshipping and praising Ra. This is probably an example of court poetry, written by Amen-nekhtu son of Apuy.

DONITCH, S.—*Funeral cones of the Odessa Museum*. These are of Min-mes, Userhat (*Season* 86), and Mentnemhat, which differs from that in *Season* 85 by having a wife Nesikhonsu instead of Uza-renset.

Nature, 21 June 1930.

KEITH, A.—*Recent discoveries of Fossil Man*. This includes the account of the Palestine men. Both the Galilee skull and that from Shukba are of Neanderthal type. They were both associated with Mousterian flint work. The cave at Carmel contains work of all periods back to the Mousterian. The people of Aurignacian age were much like the North African of Capsian age; both had a habit of taking out one of the front teeth.

The Neanderthal Phase of Man. By Aleš HRDLÍČKA. 8^{vo}. 29 pp. 4 plates. (Smithsonian Report 1928.)

This is a valuable collection of all the data for judging the case. The question proposed is, Was Neanderthal man assimilated or extinguished? It is generally accepted that his work was that known as Mousterian, and that he occupied all habitable Europe, and nearer fringes of Africa and Asia. A diagram is given of 28 species of animals occurring from pre-Chellean to Solutrean times; also diagrams of the glaciation estimates by different authors. The Chellean is taken back to 200,000 years, and the pre-Chellean to almost as long an age before. The general culture of *Neanderthalensis* is shown to have been much the same as that of earlier and later man. The conclusion is a strong argument that it passed on into the present type.

Akad. d. Wissensch. Wien, phil.-hist. Klasse. 1930 V-XIII.

JUNKER, H.—*Grabung der vorgeschichtlichen Siedlung Merimde-Benisalâme.* This preliminary report contains some important links with Palestine. The work was on the western edge of the Delta, opposite to Tell Yehudiyeh. Among the objects were pottery spoons like those at Fara, site D¹ about S.D. 35; pear mace heads like those of site A, Fara, about S.D. 50; a stone conoid axe like one of site A about S.D. 50; a straw-lined granary pit like those found in the Fayum. These connections show that the Delta—Palestine civilisation was wide-spread, and therefore may well be earlier than the similar forms found in Europe.

Syria. X, part 1.

MONTET, P.—*Quelques objets provenant de Byblos.* This first describes the two scarabs of the prince Antn, belonging to Prof. Newberry; adding that on a relief at Byblos there is a cartouche which can only be that of Neferhetep I, with titles of a "prince of Byblos Antn born of the prince Riin." The material of these scarabs has not been stated; but it is announced that all scarabs from the Byblos tombs are of amethyst, while those from the temple deposits are of other stones. There follow inconclusive remarks about a fragment of alabaster with name of Dadkara.

ALBANESE, L.—*Note sur Ras Shamra.* This site 7 miles north of Latakia contains various tombs; one stone-built chamber, 7 × 10 feet, is planned, having a pointed ridge roof. It contained Cypriote pottery of about 1300 B.C. See further discoveries below, from vol. X, part 4.

Syria. X, part 4.

SCHAEFFER, F. A.—*Fouilles de Minet-el-Beida et de Ras Shamra.* On the Syrian coast, opposite to the north-east corner of Cyprus, a little harbour sheltered an ancient site, perhaps the Greek Heracleia. At about a mile inland lies a hill city, now Ras Shamra. On the bay was found a necropolis of rock tombs, containing Cypriote and Mykenaeen vases; also near by were neolithic polished axes, and Roman remains, so that there is a long continuity of occupation. A group of bronze figures, some inlaid with gold or silver, showed native work under Egyptian influence, the crowned falcon along with Reshef. Other

tombs of fine masonry were found; in one lay an ivory box lid bearing a relief of a seated goddess with Cretan skirts, between two rampant goats, and holding three ears of corn in each hand. Leaving the bay, excavation on the hill disclosed remains of a "palace" containing cuneiform tablets, of a type of writing not yet understood. Many bronze adzes and hoes, also inscribed, were found, with swords, and daggers having the handle inlaid. The latter are of the Persian and Assyrian type. Tiglath-Pileser appears to have destroyed the place about 1110 B.C.

M. Virolleaud adds notes on the tablets. Those in ordinary Accadian are vocabularies, syllabaries and lists of gods, also two letters addressed to the Aki-hinni, king of the place. The name is Mitannian.

SEYRIG, H.—*La Triade Héliopolitaine et les temples de Baalbek*. The conclusion, largely drawn from the little leaden figures, is that Hadad—Jupiter, Baal—Helios, and the wine god—Mercury Bacchus, were venerated.

HROZNY, F.—A summary of a paper by Prof. Hrozny is given, which is of great importance. This is on an inscription from Boghaz-Keui, by Anittas king of Kussara about 2000 B.C., one of the oldest documents in an Indo-European language. It shows the condition of Asia Minor soon after the European advance. There was a group of small states striving for power. Pitkhanas father of Anittas had seized Nêsas (Nyssa in N.W. Cappadocia, near the salt lake Tatta), and Anittas made it his capital. Pijustis king of the Hatti was conquered, also the king of Zalpuvas, and Anittas took Salativara, all probably in western Cappadocia. The name Hittite does not belong to Indo-European invaders, but to an earlier people of Asia Minor, living in the bend of the Halys. It is due to the great kings of Kussara who took possession of the old kings of the Hatti. The primitive name of the Hittites was really the Nesites of Nêsas.

Syria. XI, part 1.

DUNAND, M.—*Nouvelle inscription découverte à Byblos*. A slab of limestone, re-used a few centuries ago for a cistern, has on it ten lines of inscription, partly broken at the top. The signs, of which 119 remain, are largely copies of Egyptian hieroglyphs clumsily formed, but without much hieratic or cursive influence. Obviously they have important bearing on the alphabetic question. The number of forms distinguished is 38, but there may have been a few more in use: in this quantity it resembles the Karian and Spanish alphabets. By part of the last line being blank, it obviously reads from right to left; as there are no reversals of signs, the lines all read the same way. Yet of the unsymmetric Egyptian signs five read from left to right, and two from right to left, according to Egyptian rules. Half the signs form repeating groups, and there is a group of 9 signs repeated, and another repetition of 6 signs. Between the repetitions are usually only two or three other signs, so nearly the whole is divided into groups. With such a mass of repetition there is good ground for conjecture.

BOISSIER, A.—*Cylindre Syro-Égyptien*. This cylinder is inscribed in cuneiform with adoration by Eskaluti. This king is standing, crowned with disc and horns, but the photograph of the cast is indistinct. He is before a god, who stands wearing the head-dress of Khnumu (with feathers and ram's horns), in the left

hand a papyrus stem, in the right a long-handled khepesh. Between the figures is a palm with leafage stem. From the style this is referred to the xvth dynasty, so it must represent a Hyksos king, otherwise only known by his Ra name.

DUPONT-SOMMER, A.—*Les fouilles de Ramet-el-Khalil*. This stone enclosure, two miles north of Hebron, is well known. When visited (from Tell Hesi) in 1891, it was noted that the main walls were of large blocks, dressed with long strokes, while they were lined with a wall face of blocks dressed by comb-pick. After being untouchable for ages, as being *wakf* property, at last the German Society has been allowed to examine the place. It is now found that there are five periods of construction. The middle period is that of a church of Constantine: it is doubtless for that construction that the stone of Domna daughter of Demetrius was re-used (*Tell el Hesi*, 60), and the old lintel and door sill were used as building blocks. The previous use was as the "market of Hadrian" or "of the Terebinth," named in texts; before that, the main walls are attributed to Herod. The coins found are of Trajan, onwards to an abundance of the Constantine family. It is supposed that the basilica was destroyed by the Persians in 614, and a lesser church was put together about 630 by the Patriarch Modestus. Lastly there was Arab work and coinage. Later work showed that a large pool had been made in Arab times; also that there were traces of pre-Herodian occupation, attributed to the first Iron Age, and to the north of the enclosure were pieces of pottery of early Bronze Age, found at 13 feet deep. It is supposed therefore that this was a sanctuary, not only from the time of Abraham, but of Canaanite age. The present building, however, is stated to be Herodian.

NOTES AND NEWS.

A SAD blow has fallen on official Egyptology in the sudden death of Dr. HALL. His activity in reorganizing the great collection in his charge, his geniality in meeting requests for information and the use of specimens, and his energy in writing for public guidance, have greatly increased the utility of the public property which he managed. Happily he had passed on his spirit of helpfulness to his staff, who have secured the friendship of all who work on oriental subjects. Unhappily neither the space nor the Treasury enable them to carry out the needed expansion of the Department.

The British School of Egyptian Archaeology will be at work for the season at Tell Ajjul, near Gaza. In addition to the staff named in our last number there is the help of Mr. Royds, with a wide experience in Iraq, which may assist in all native official matters. The staff is double of that hitherto engaged, and sufficient scope and supplies must be found for their activity. So many contributions are in arrears for 1930, that the excavations may be seriously hampered if these are not forthcoming. It is also asked that special donations be made, either towards the scholarships for students, or for the actual digging.

The importance of Tell Ajjul is due to the site having been occupied during the time from the Hyksos back to the Copper Age, a period for which we have not any stratified deposits yet published. Unfortunately the prevalence of serious malaria has compelled us to postpone work until the heavy rains come, and therefore the High Commissioner has graciously permitted us to resume our previous work on Tell Fara, until we can assemble at Ajjul. The object of the present excavation at Fara is the remainder of the deep cemetery of the xxth dynasty, and the search for the temple site is also in progress.

The abandonment of the large site of Tell Ajjul at about the xiith dynasty, 2400 B.C., perhaps indicates the removal of the population, to found the city of Gaza, at a sufficient distance from the malarious valley. This is like the removal of Italian populations from the ancient Greek cities of the coast, to the hill cities above the plain, in South Italy.

The activities of the coming season, January-May, at Tell Ajjul will depend on the amount of support which we receive during these months. A site of such importance should be worked at full strength without hindrance; we have the increased staff for this, and are not short of labour.

We earnestly hope that every reader of *Ancient Egypt* will send a donation large or small addressed to Lady Petrie, University College, Gower Street, London W.C. 1 (Barclay & Co., not negotiable). All who give a donation of two guineas, or more, should state whether they desire the volume when published, or prefer it all to be used in the excavation.







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